



13351 Scenic Highway
P.O. Box 74137
Baton Rouge, LA 70874-4137
225.778.1234

August 15, 2014

Reference No. 055364-00

Mr. Bartolomé J. Cañellas
Remedial Project Manager
United States Environmental Protection Agency - 6SF-RL
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202

Dear Mr. Cañellas:

Re: 2014 Crawfish and Sediment Sample Summary
Tier 2 Remedial Investigation
Devil's Swamp Lake Site
East Baton Rouge Parish, Louisiana
CERCLA Docket No. 06-04-10

Clean Harbors Environmental Services, Inc. (Clean Harbors), on behalf of Baton Rouge Disposal, LLC (Respondent), submits herein to the U.S. Environmental Protection Agency (EPA) a summary of the 2014 crawfish and sediment sample collection for the Tier 2 Remedial Investigation (RI) at the Devil's Swamp Lake Site in East Baton Rouge Parish, Louisiana (Site). The location of the Site is shown on a vicinity map as Figure 1. This letter is submitted in response to the EPA correspondence dated April 28, 2014, which included a request for Clean Harbors to attempt collection of additional samples to confirm the ability to catch crawfish in select Areas of Investigation (AOIs) at the Site and to provide data to verify the bioaccumulation model calculated exposure concentrations.

1.0 Tier 2 Remedial Investigation

The Tier 2 RI is being conducted in accordance with the Unilateral Administrative Order (UAO) for Remedial Investigation/Feasibility Study (RI/FS) of the Devil's Swamp Lake Site (CERCLA Docket No. 06-04-10). The UAO outlines the requirements for completion of the RI/FS for the Site.

The Tier 2 RI sample collection activities were initiated in July 2012 and crawfish sample collection was not successful due to the Site conditions encountered at that time. Clean Harbors continued to monitor Site conditions including Mississippi River water elevation,



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temperature, and duration of inundation to evaluate potential suitability for crawfish sample collection.

Representatives of Clean Harbors, Conestoga-Rovers & Associates (CRA), Louisiana Department of Environmental Quality (LDEQ), and EA Engineering, Science, and Technology (EA) participated in crawfish sample collection activities from February 2013 through May 2013. Documentation of the weekly crawfish sample collection attempts and activities were submitted to the EPA in weekly email updates and monthly progress reports. A total of 15 crawfish samples were collected from areas to the south and west of the Site. The EPA requested submittal of the crawfish sampling locations by email on October 23, 2013. On November 7, 2013, Clean Harbors submitted a correspondence that summarized the 2013 Tier 2 RI crawfish sample collection activities and a map showing the approximate crawfish trap locations. The crawfish samples with volume sufficient for submittal to the laboratory for analyses were collected primarily from the traps located in the swamp to the west of Devil's Swamp Lake and in the South Bayou Baton Rouge area.

In a letter dated January 15, 2014, the EPA requested clarification on the 2013 crawfish sample locations, the AOIs, and the crawfish home range for the Tier 2 RI. On February 13, 2014, representatives of the EPA, LDEQ, Louisiana Department of Health and Hospitals (LDHH), Clean Harbors, and CRA participated in a conference call to continue discussion of the 2013 Tier 2 RI crawfish sample locations. Clean Harbors and CRA explained the crawfish sample collection procedure and documentation and discussed the limited availability of crawfish within the Site boundaries and AOIs. At the request of EPA, Clean Harbors and CRA agreed to complete Site specific bioaccumulation modeling to estimate crawfish tissue concentrations at the Site. On February 26, 2014, Clean Harbors, EPA, and CRA participated in an additional conference call to discuss format for submittal of the bioaccumulation modeling approach and results.

On March 28, 2014, Clean Harbors submitted a response to the January 15, 2014, EPA correspondence. The response letter included a detailed discussion of the 2013 Tier 2 RI crawfish sample collection procedures and trap locations. The response letter also included the site specific bioaccumulation modeling input parameters and results [estimated polychlorinated biphenyl (PCB) concentrations in crawfish], as discussed and requested during the February 13, and February 26, 2014, conference calls. On April 28, 2014, EPA submitted a correspondence which included a request for Clean Harbors to attempt collection of additional samples to confirm the ability to catch crawfish in select AOIs and to provide data to verify the bioaccumulation model calculated exposure concentrations.

On May 1, 2014, representatives of EPA, LDEQ, LDHH, Clean Harbors, and CRA participated in a conference call to discuss additional crawfish sample collection at the Site. The EPA indicated that collection of whole body crawfish samples from the areas in and around the North Devil's



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Swamp Lake shoreline to verify the bioaccumulation model crawfish exposure concentrations would be acceptable. The LDEQ and LDHH indicated that edible tissue samples would be preferred for use in the preparation of a fishing advisory. The EPA recommended that composite whole body crawfish samples be collected from multiple traps located in the same general defined sample area. The EPA also clarified that analysis of crawfish samples for the 12 World Health Organization (WHO) list of PCB congeners would be acceptable. Clean Harbors and CRA agreed to prepare a Tier 2 RI Work Plan Addendum for submittal and approval by EPA prior to additional data collection.

On May 8, 2014, Clean Harbors and CRA received correspondence by fax from the LDEQ which included review comments on the April 28, 2014, EPA response letter. The LDEQ requested analysis of the edible portions of crawfish for the 12 WHO list of PCB congeners, hexachlorobenzene (HCB), hexachlorobutadiene (HCBD), mercury, lead, and arsenic, if there is a sufficient sample volume collected. In addition, the LDEQ approved the analysis of samples for the 12 WHO PCB congeners and did not request a separate hepatopancreas tissue sample.

Clean Harbors submitted the *Tier 2 RI Work Plan Addendum* to the EPA on May 9, 2014. The LDEQ approved the work plan by email and fax correspondence on May 12, 2014. The EPA also approved the work plan by email on May 12, 2014.

2.0 2014 Crawfish Sample Collection

On May 6, 2014, Clean Harbors and CRA conducted a Site visit to evaluate potential crawfish trap locations. The Mississippi River stage was at approximately 25 feet at the Baton Rouge gauge and there was limited water in the swamp areas adjacent to the lake. Clean Harbors and CRA identified five potential Sampling Areas in North Devil's Swamp Lake that may have favorable conditions for trapping and crawfish sample collection.

On May 14, 2014, Clean Harbors and CRA set and baited a total of 25 crawfish traps in North Devil's Swamp Lake, five traps in or near each of the five Sampling Areas proposed in the work plan. Crawfish were harvested with commonly used crawfish traps. Each crawfish trap was marked with flagging and labeled with a number in each Sampling Area. Bait typically used in commercial crawfishing (Pogy-Menhaden) was placed in each crawfish trap and each trap was closed and sealed with twisted wire to prevent tampering. The traps were placed in or near the identified Sampling Areas at locations on the banks of North Devil's Swamp Lake in a minimum of approximately one foot of water depth. LDEQ was present during the crawfish trap deployment. The Sampling Areas and trap locations are shown on Figure 2. GPS coordinates for crawfish trap locations are shown on Table 1.



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On May 16, 2014, Clean Harbors, CRA, and LDEQ checked the traps and a total of five crawfish were collected from the five Sampling Areas. On May 19, 2014, the traps were checked, and a total of five crawfish were collected from the five Sampling Areas. On May 21, 2014, the traps were checked again and a total of 13 crawfish were collected from the five Sampling Areas. On May 23, 2014, the traps were checked again and a total of three crawfish were collected from the five Sampling Areas. On May 26, 2014, the traps were checked again and zero crawfish were collected. On May 29, 2014, the traps were checked again and two crawfish were collected.

On June 2, 2014, the crawfish traps were checked and three crawfish were collected. On June 4, 2014, representatives of Clean Harbors, CRA, and LDEQ checked the traps and two crawfish were collected. On June 6, 2014, the crawfish traps were checked and three crawfish were collected and on June 9, 2014, the crawfish traps were checked again and five crawfish were collected. Clean Harbors and CRA pulled up all crawfish traps on June 11, 2014, and suspended crawfish sample collection attempts. The number of crawfish collected from each trap is shown on Table 1.

During the crawfish sample collection activities, the number of crawfish and associated trap number were recorded. Upon collection, crawfish were placed in sealed, plastic bags, labeled, and placed in a freezer located on-Site. Crawfish collected from traps in the same Sampling Area were combined to create a single composite sample from each Sampling Area.

On June 4, 2014, Clean Harbors and CRA submitted one composite whole body crawfish sample from Sampling Area 1 (11 total crawfish with Sample ID CRAWFISH-20) and one composite whole body crawfish sample from Sampling Area 2 (12 total crawfish with Sample ID CRAWFISH-21). On June 11, 2014, Clean Harbors and CRA submitted one composite whole body crawfish sample from Sampling Area 3 (5 total crawfish with Sample ID CRAWFISH-22), one composite whole body crawfish sample from Sampling Area 4 (three total crawfish with Sample ID CRAWFISH-23), and one composite whole body crawfish sample from Sampling Area 5 (four total crawfish with Sample ID CRAWFISH-24). The samples were double-bagged, labeled, and placed on ice in an insulated ice chest for subsequent delivery to the laboratory. Appropriate chain of custody documentation accompanied the samples as required by the Quality Assurance Project Plan (QAPP). The five composite whole body crawfish samples were submitted to TestAmerica Laboratories, Inc. in Pittsburgh, Pennsylvania (TestAmerica) for analysis of WHO list PCB congeners by EPA Method 1668A and lipid content by the dichloromethane extraction solvent method in accordance with the *Tier 2 RI Work Plan Addendum*. There was not sufficient sample volume for analysis of edible tail tissue for each crawfish sample or for analysis of HCB, HCBd, mercury, lead, or arsenic as requested by LDEQ.



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3.0 2014 Sediment Sample Collection

On June 4, 2014, Clean Harbors and CRA collected one composite sediment sample from Sampling Area 1 (Sample ID COMP-1) and one composite sediment sample from Sampling Area 2 (COMP-2). On June 11, 2014, Clean Harbors and CRA collected one composite sediment sample from Sampling Area 3 (COMP-3), one composite sediment sample from Sampling Area 4 (COMP-4), and one composite sediment sample from the single successful trap location in Sampling Area 5 (COMP-5). Surface sediment (0-6 inch) samples were collected from each successful trap location to create a composite sample for each Sampling Area. The 2014 sediment sample locations are shown on Figure 3.

A small boat was used to access the 2014 crawfish trap locations for collection of sediment samples. The boat was stabilized at each sample location, and sediment samples were collected. A 3-inch-diameter aluminum Vibracore[®] sample sleeve was used for collection of sediment samples. The sampler and/or sample boat was positioned over the sampling location and the sample core was then pushed by hand through the sediment to a depth of 10 inches or until refusal was met. The core sample was then hoisted to the surface; each sleeve was sealed and labeled at the sample location, and immediately transported to the staging area. The sample sleeves were cut open and the undisturbed sediment core was extruded for characterization. Sediment samples were composited from each Sampling Area with the use of a stainless steel mixing bowl that was decontaminated between each Sampling Area. Composite samples were placed in laboratory provided sample containers. Sample containers were sealed, labeled, and placed on ice in an insulated ice chest for subsequent delivery to the laboratory. The sediment samples were submitted to TestAmerica for analysis of WHO list PCB congeners by EPA Method 1668A, total organic carbon (TOC) by the Lloyd Kahn Method, and grain size by ASTM Method D422 in accordance with the *Tier 2 RI Work Plan Addendum*.

4.0 Tissue Sample Investigation Results

A total of five whole body crawfish tissue samples were collected from five Sampling Areas located throughout North Devil's Swamp Lake AOI. The crawfish tissue sample analytical laboratory results are summarized on Table 2 and analytical laboratory reports are included in Attachment A.

5.0 Sediment Sample Investigation Results

A total of five composite sediment samples were collected for analysis of the 12 WHO list of PCB congeners, percent moisture, TOC, and grain size from the Site in accordance with the



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Tier 2 RI Work Plan Addendum at the five Sampling Areas. Surface (0-6 inch) depth sediment samples were collected from North Devil's Swamp Lake at 13 crawfish trap locations (1, 3, 4, 5, 7, 9, 10, 12, 13, 14, 16, 19, 20, and 22). Sediment samples collected from crawfish trap locations 1, 3, 4, and 5 (Sampling Area 1) were composited for sample COMP-1. Sediment samples collected from crawfish trap locations 7, 9, and 10 (Sampling Area 2) were composited for sample COMP-2. Sediment samples collected from crawfish trap locations 12, 13, and 14 (Sampling Area 3) were composited for sample COMP-3. Sediment samples from crawfish trap locations 16, 19, and 20 (Sampling Area 4) were composited for sample COMP-4. Sediment sample COMP-5 was composited from four sediment samples collected at crawfish trap location 22 (Sampling Area 5). The boring logs for each sediment sample were labeled according to the crawfish trap location and are included in Attachment B.

The analytical laboratory results from the 2014 sediment samples are summarized on Table 3, and analytical laboratory reports are included as Attachment A.

6.0 Bioaccumulation Modeling and Human Health Risk Assessment

Although the collection of any measurable quantity of crawfish from the Site-specific AOIs was an issue both historically and during the Tier 2 RI sample collection period, EPA expressed concern about the representativeness of the 2013 crawfish samples, because they were not collected from the Site AOIs with identified sediment impact for use in the human health risk assessment (HHRA). To further consider the risk calculation uncertainties potentially associated with the difficulty in crawfish sample collection and at the request of EPA, Clean Harbors agreed to complete sediment to crawfish tissue bioaccumulation modeling to estimate theoretical exposure concentrations for human receptors that may ingest crawfish within Devil's Swamp Lake and the immediate surrounding swamp areas.

Sediment to biota accumulation factors (BSAFs) were calculated using Site-specific data including crawfish tissue sample concentrations, lipid content, sediment sample concentrations, and sediment TOC. The Site-specific BSAFs were used to calculate theoretical crawfish exposure concentrations for the individual AOIs (Drainage Ditch, North Devil's Swamp Lake, North Central Devil's Swamp, South Devil's Swamp Lake, and South Bayou Baton Rouge).

Data from the 2014 sampling program provide a stronger data set for development of BSAFs. In particular, as described in Section 5.0 above, sediment samples were co-located with the traps in which crawfish were successfully collected. Therefore, the BSAFs developed using the data from the 2014 sampling program are more representative than BSAFs developed using the 2013 crawfish sample data and the 2012 sediment sample data.



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The estimated crawfish exposure concentrations (tails only) will be used to assess the potential uncertainty in the calculation of adverse effects on human health associated with hypothetical recreational collection and consumption of this potential food item. The crawfish tail exposure concentrations were calculated with the use of the 2013 whole body vs. tail tissue ratios, 2013 lipid content data, and 2014 crawfish sample data. The difficulties in actually collecting any crawfish in these areas would be realized by the crawfisherman and may be relevant to the risk calculations, but the modeling evaluation can provide context for the uncertainty associated with the data collection difficulties. The poor recovery of crawfish expected in these areas make the modeling results conservative for use in the calculation of potential risk. The evaluation of potential human health risk from consumption of crawfish will include the individual AOIs and the entire Site.

A summary of the bioaccumulation modeling approach, results, and exposure concentrations for the HHRA is included in Attachment C. Additional documentation for calculation of the BSAFs is included in Attachment D.

7.0 Ecological Risk Assessment

The *Step 3 - Problem Formulation Report for the BERA* was completed and submitted to the EPA and LDEQ on February 10, 2012. The refinement process identified a potential for risk to:

- Benthic invertebrates exposed to PCB aroclors in sediment of the Drainage Ditch AOI and North Devil's Swamp Lake AOI
- Avian and mammalian insectivores exposed to PCB aroclors and congeners in sediment in all four AOIs
- Mammalian herbivores exposed to sediment of the North Devil's Swamp Lake AOI
- Avian and mammalian piscivores exposed to sediment in the Drainage Ditch AOI
- Mammalian insectivores exposed to soil in the Drainage Ditch AOI
- Mammalian herbivores exposed to soil in the Drainage Ditch AOI

As outlined in the EPA-approved *Final Tier 2 RI Work Plan*, the data collection program for the Tier 2 RI and Baseline Ecological Risk Assessment (BERA) addressed the exposure pathways and the avian and mammalian receptors identified above. As discussed with the EPA and LDEQ on November 9, 2011, the BERA is not intended to address risk to benthic invertebrate communities. Due to the relatively high degree of uncertainty in the calculation of PCB concentrations in benthic invertebrates and fish, the Tier 2 RI and BERA included collection and analysis of invertebrates (crawfish) and fish (catfish and largemouth bass) for whole body



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concentrations of PCBs. The data will be used to re-evaluate the potential of risk to avian and mammalian insectivores and piscivores.

Crawfish samples collected in both 2013 and 2014 are intended only for use in the food chain models, not to evaluate risk to crawfish or other benthic organisms. The indicator species for the food chain models (bald eagle, great blue heron, belted kingfisher, mink, and raccoon) forage throughout the Devil's Swamp Lake area, both within and contiguous to the AOIs. Consequently, exposure should consider all areas adjacent to the AOIs where the indicator species forage, not only the AOIs. As requested by the EPA and United States Fish and Wildlife Service (USFWS) and proposed in the approved *Tier 2 RI Work Plan*, the BERA will evaluate risk for the entire Site, not the individual AOIs.

In addition to providing data for calculation of exposure concentrations for the HHRA, the 2014 sampling program also provided data for calculation of exposure concentrations for the BERA. In particular, BSAFs for mammalian and avian receptors were calculated. The summary of the bioaccumulation modeling approach, results, and exposure concentrations for the BERA is included in Attachment C.

8.0 Reporting

Following the EPA review of the bioaccumulation modeling approach, Clean Harbors plans to incorporate the results in the Human Health and Ecological Risk Assessments and present an evaluation of the results in the Tier 2 RI Report.

Should you have any questions or require additional information regarding this submittal, please contact John Arbuthnot at (225) 778-3596.

Yours truly,

A handwritten signature in blue ink that reads "Priscilla L. Campbell".

for John C. Arbuthnot, PE
Senior Remediation Manager
Clean Harbors Environmental Services, Inc.
On behalf of:
Baton Rouge Disposal, LLC



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KMM/cmp/35

Encl. Figures

Tables

Attachment A - Analytical Laboratory Reports

Attachment B - Boring Logs

Attachment C - Summary of the 2014 Bioaccumulation Modeling Approach and Results

Attachment D - Additional Documentation for Calculation of BSAFs

cc: *via e-mail*:

Keith Horn, Louisiana Department of Environmental Quality

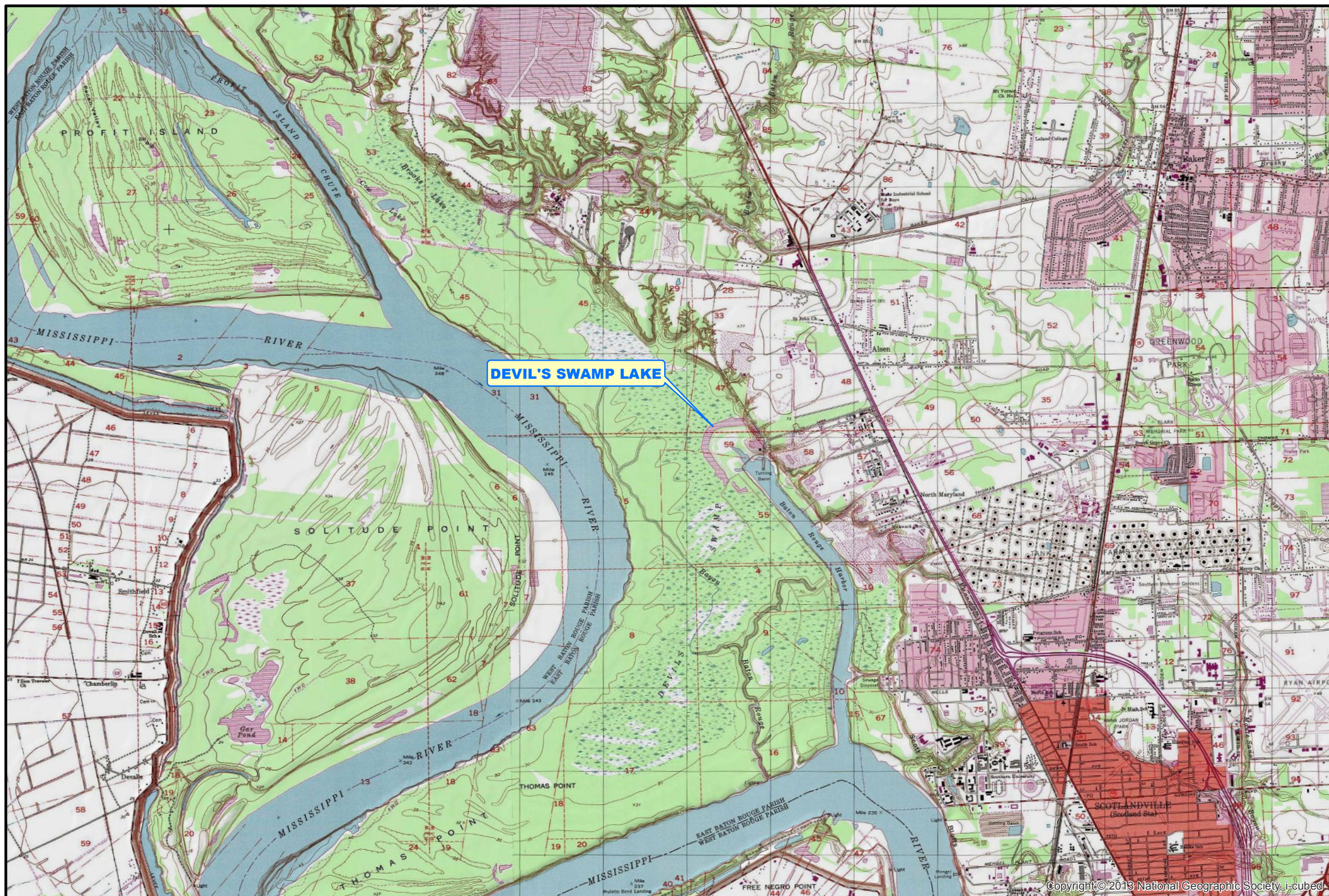
Phil Turner, EPA

Mark Paddack, EA Engineering, Science, and Technology

Pressley L. Campbell, Conestoga-Rovers & Associates

Darcie Olexia, Louisiana Department of Health and Hospitals

Barry Forsythe, U.S. Fish and Wildlife Service



LOUISIANA

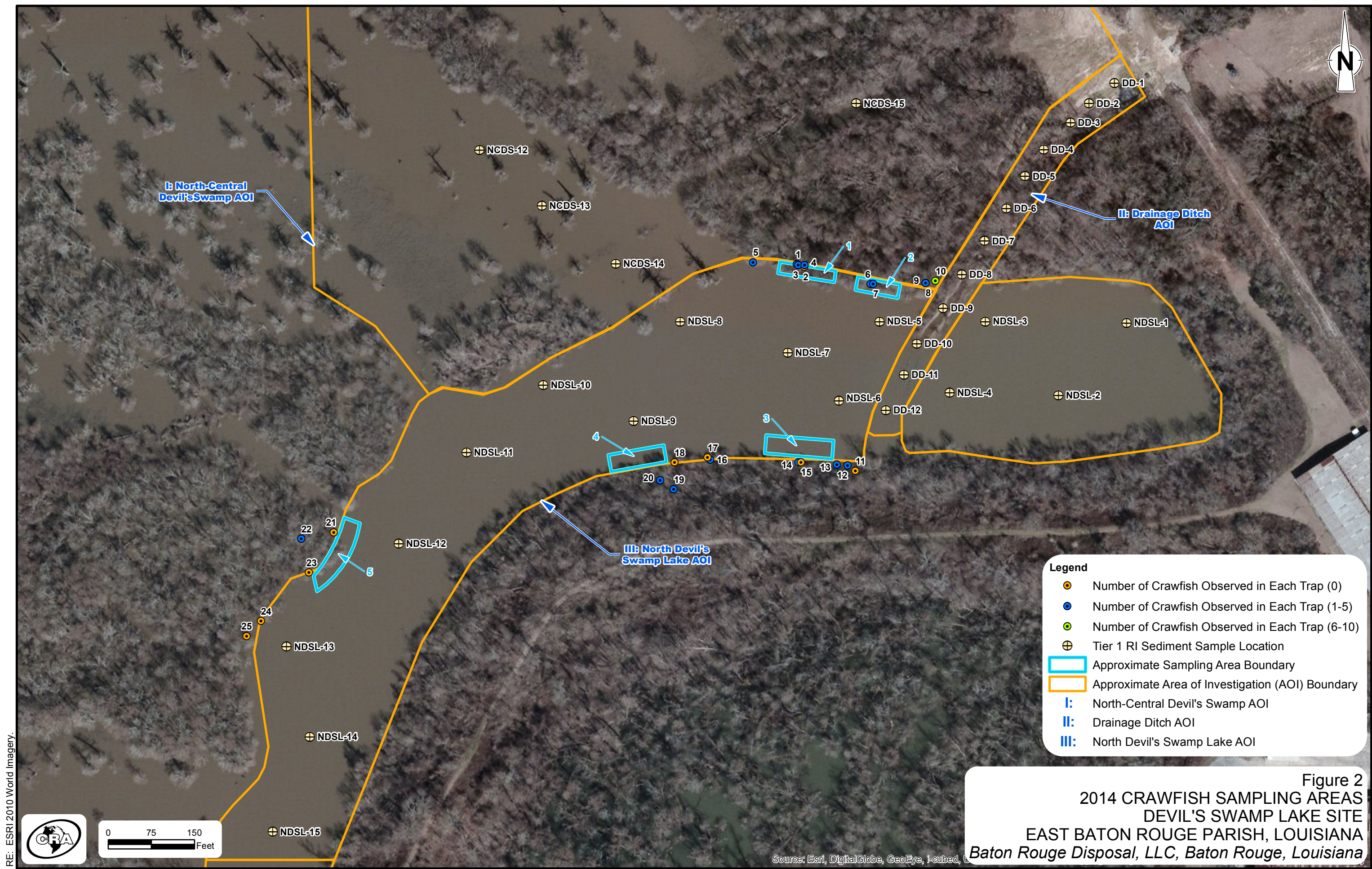


0 2,000 4,000
Feet

RE: USGS 7.5 Minute Topographic Map.



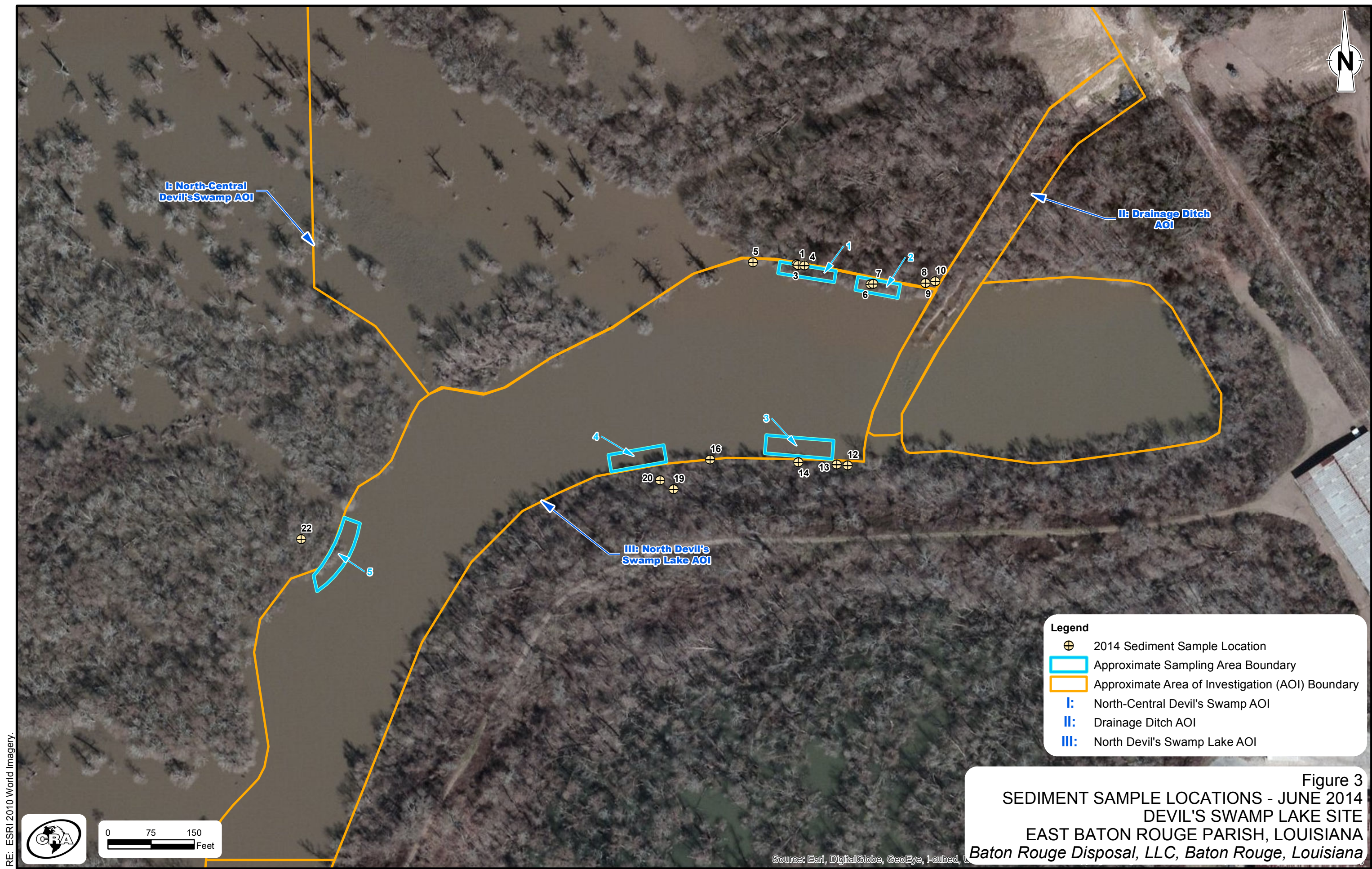
Figure 1
VICINITY MAP
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA
Baton Rouge Disposal, LLC, Baton Rouge, Louisiana



RE: ESRI 2010 World Imagery.



Source: Esri, DigitalGlobe, GeoEye, i-cubed, U



RE: ESRI 2010 World Imagery.



0 75 150 Feet

Source: Esri, DigitalGlobe, GeoEye, i-cubed, U

Figure 3
SEDIMENT SAMPLE LOCATIONS - JUNE 2014
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA
Baton Rouge Disposal, LLC, Baton Rouge, Louisiana

TABLE 1
2014 CRAWFISH TRAP INFORMATION
TIER 2 REMEDIAL INVESTIGATION
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA

Sampling Area	Trap Number	Trap Location				Number of Crawfish Caught									TOTAL	
		Latitude		Longitude		5/16/2014	5/19/2014	5/21/2014	5/23/2014	5/26/2014	5/29/2014	6/2/2014	6/4/2014	6/6/2014		6/9/2014
1	1	N	30.562287	W	91.222379	1	0	1	1	0	0	0	0	0	0	3
	2	N	30.562273	W	91.222338	0	0	0	0	0	0	0	0	0	0	0
	3	N	30.562283	W	91.222371	0	1	0	0	0	0	0	0	0	1	2
	4	N	30.562281	W	91.222336	1	0	0	0	0	1	0	1	0	0	3
	5	N	30.562299	W	91.222621	0	1	2	0	0	1	0	0	0	1	5
AREA 1 TOTAL						2	2	3	1	0	2	0	1	0	2	13
2	6	N	30.562185	W	91.221973	0	0	0	0	0	0	0	0	2	0	2
	7	N	30.562186	W	91.221959	1	0	1	1	0	0	0	0	0	0	3
	8	N	30.562187	W	91.221669	0	0	0	0	0	0	0	0	0	1	1
	9	N	30.562187	W	91.221669	0	0	0	0	0	0	1	0	0	0	1
	10	N	30.562195	W	91.221615	0	0	7	1	0	0	0	0	1	0	9
AREA 2 TOTAL						1	0	8	2	0	0	1	0	3	1	16
3	11	N	30.561294	W	91.222073	0	0	0	0	0	0	0	0	0	0	0
	12	N	30.561321	W	91.222116	0	0	2	0	0	0	1	0	0	0	3
	13	N	30.561326	W	91.222175	0	0	0	0	0	0	0	0	0	1	1
	14	N	30.561340	W	91.222387	0	0	0	0	0	0	0	0	0	1	1
	15	N	30.561340	W	91.222373	0	0	0	0	0	0	0	0	0	0	0
AREA 3 TOTAL						0	0	2	0	0	0	1	0	0	2	5
4	16	N	30.561359	W	91.222874	0	1	0	0	0	0	0	0	0	0	1
	17	N	30.561370	W	91.222889	0	0	0	0	0	0	0	0	0	0	0
	18	N	30.561348	W	91.223072	0	0	0	0	0	0	0	0	0	0	0
	19	N	30.561220	W	91.223078	1	0	0	0	0	0	0	0	0	0	1
	20	N	30.561263	W	91.223152	0	1	0	0	0	0	0	0	0	0	1
AREA 4 TOTAL						1	2	0	0	0	0	0	0	0	0	3
5	21	N	30.56104	W	91.22496	0	0	0	0	0	0	0	0	0	0	0
	22	N	30.56101	W	91.22514	1	1	0	0	0	0	1	1	0	0	4
	23	N	30.56085	W	91.22510	0	0	0	0	0	0	0	0	0	0	0
	24	N	30.56062	W	91.22537	0	0	0	0	0	0	0	0	0	0	0
	25	N	30.56055	W	91.22545	0	0	0	0	0	0	0	0	0	0	0
AREA 5 TOTAL						1	1	0	0	0	0	1	1	0	0	4
DAILY TOTAL						5	5	13	3	0	2	3	2	3	5	
SITE TOTAL																41

TABLE 2

2014 CRAWFISH SAMPLE ANALYTICAL DATA

TIER 2 REMEDIAL INVESTIGATION

DEVIL'S SWAMP LAKE SITE

EAST BATON ROUGE PARISH, LOUISIANA

Sample Location:		SA-1	SA-2	SA-3	SA-4	SA-5
Sample Identification:		055364-T2-060414-FT-CRAWFISH-20	055364-T2-060214-FT-CRAWFISH-21	055364-T2-060914-FT-CRAWFISH-22	055364-T2-051914-FT-CRAWFISH-23	055364-T2-060414-FT-CRAWFISH-24
Sample Date:		6/4/2014	6/2/2014	6/9/2014	5/19/2014	6/4/2014
	Units					
General Chemistry						
Lipids	%	1.8	1.4	1.6	2.1	0.91
PCBs						
(PCB 105) 2,3,3',4,4'-Pentachlorobiphenyl	ng/g	79	79	8.1	1.9	0.25
(PCB 114) 2,3,4,4',5-Pentachlorobiphenyl	ng/g	19	4.3	0.43	0.091	0.017
(PCB 118) 2,3',4,4',5-Pentachlorobiphenyl	ng/g	220	230	33	7.4	1.0
(PCB 123) 2',3,4,4',5-Pentachlorobiphenyl	ng/g	17	5.4	0.80	0.19	0.020
(PCB 126) 3,3',4,4',5-Pentachlorobiphenyl	ng/g	1.1 J	0.27 J	0.25 J	0.014 J	0.0027 J
(PCB 156) 2,3,3',4,4',5-Hexachlorobiphenyl	ng/g	77 *	23 *	3.7 *	0.88 *	0.11 *
(PCB 157) 2,3,3',4,4',5'-Hexachlorobiphenyl	ng/g	77 #	23 #	3.7 #	0.88 #	0.11 #
(PCB 167) 2,3',4,4',5,5'-Hexachlorobiphenyl	ng/g	24	7.1	1.5	0.38	0.049
(PCB 169) 3,3',4,4',5,5'-Hexachlorobiphenyl	ng/g	0.30	0.062 J	0.026 J	0.0047 J	< 0.010
(PCB 189) 2,3,3',4,4',5,5'-Heptachlorobiphenyl	ng/g	2.2	0.64	0.19	0.036	0.0042 J
(PCB 77) 3,3',4,4'-Tetrachlorobiphenyl	ng/g	16	2.6	0.64	0.14	0.018
(PCB 81) 3,4,4',5-Tetrachlorobiphenyl	ng/g	0.22 J	0.054 J	0.031 J	0.0027 J	< 0.010

Notes:

< - Not present at or above the associated value

J - Estimated concentration

* - associated concentration is the sum of co-eluting congeners (i.e. PCB 86)

- indicates a redundant concentration from the co-elution set and should not be included in data summation (i.e. PCB 87)

ng/g - nanograms per gram

TABLE 3
2014 SEDIMENT SAMPLE ANALYTICAL DATA
TIER 2 REMEDIAL INVESTIGATION
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA

Sample Location:		SA-1	SA-2	SA-3	SA-4	SA-5
Sample Identification:		055364-T2-060414-SE-COMP-1	055364-T2-060414-SE-COMP-2	055364-T2-061114-SE-COMP-3	055364-T2-061114-SE-COMP-4	055364-T2-061114-SE-COMP-5
Sample Date:		6/4/2014	6/4/2014	6/11/2014	6/11/2014	6/11/2014
Sample Depth:		(0-6) IN	(0-6) IN	(0-6) IN	(0-6) IN	(0-6) IN
	Units					
PCBs						
(PCB 105) 2,3,3',4,4'-Pentachlorobiphenyl	ng/g	0.13	270	6.3	16	0.79
(PCB 114) 2,3,4,4',5-Pentachlorobiphenyl	ng/g	0.0073 J	9.4	0.43	1.3	0.038
(PCB 118) 2,3',4,4',5-Pentachlorobiphenyl	ng/g	0.45	620	21	100	3.6
(PCB 123) 2',3,4,4',5-Pentachlorobiphenyl	ng/g	0.0089 J	11 J	0.28 J	1.0 J	0.18 J
(PCB 126) 3,3',4,4',5-Pentachlorobiphenyl	ng/g	0.0021 J	1.8	0.035 J	0.26	0.038
(PCB 156) 2,3,3',4,4',5-Hexachlorobiphenyl	ng/g	0.068 *	83 *	2.2 *	9.9 *	1.1 *
(PCB 157) 2,3,3',4,4',5'-Hexachlorobiphenyl	ng/g	0.068 #	83 #	2.2 #	9.9 #	1.1 #
(PCB 167) 2,3',4,4',5,5'-Hexachlorobiphenyl	ng/g	0.022	22	0.68	3.2	0.44
(PCB 169) 3,3',4,4',5,5'-Hexachlorobiphenyl	ng/g	0.0012 J	0.41 J	0.0089 J	< 0.25	0.012
(PCB 189) 2,3,3',4,4',5,5'-Heptachlorobiphenyl	ng/g	0.0060 J	3.0	0.096	0.47	0.066
(PCB 77) 3,3',4,4'-Tetrachlorobiphenyl	ng/g	0.0056 J	18	1.1	3.3	0.077
(PCB 81) 3,4,4',5-Tetrachlorobiphenyl	ng/g	0.00078 J	0.45 J	0.035 J	0.049 J	0.0035 J
Geotech						
#10 sieve	% passed	100.0	99.3	100.0	100.0	100.0
#100 sieve	% passed	96.6	97.5	99.0	99.0	97.9
#20 sieve	% passed	99.8	99.0	99.6	99.9	99.5
#200 sieve	% passed	85.1	94.4	97.8	91.6	96.9
#4 sieve	% passed	100.0	100.0	100.0	100.0	100.0
#40 sieve	% passed	99.7	98.9	99.5	99.7	98.9
#60 sieve	% passed	99.4	98.6	99.1	99.6	98.3
#80 sieve	% passed	97.8	98.6	99.1	99.4	98.0
0.375 inch sieve	% passed	100.0	100.0	100.0	100.0	100.0
0.75 inch sieve	% passed	100.0	100.0	100.0	100.0	100.0
1 inch sieve	% passed	100.0	100.0	100.0	100.0	100.0
1.5 inch sieve	% passed	100.0	100.0	100.0	100.0	100.0
2 inch sieve	% passed	100.0	100.0	100.0	100.0	100.0
3 inch sieve	% passed	100.0	100.0	100.0	100.0	100.0
Clay	%	25.2	35.6	42.3	42.4	45.1
Coarse sand	%	0.0	0.7	0.0	0.0	0.0
Fine sand	%	14.6	4.5	1.7	8.1	2.0
Gravel	%	0.0	0.0	0.0	0.0	0.0
Medium sand	%	0.3	0.4	0.5	0.3	1.1
Sand	%	14.9	5.6	2.2	8.4	3.1
Silt	%	59.9	58.8	55.5	49.2	51.8
General Chemistry						
TOC	mg/kg	270 J	1300 J	2400	14000	9100

Notes:

< - Not present at or above the associated value.

J - Estimated concentration.

TOC - Total Organic Carbon

* - associated concentration is the sum of co-eluting congeners (i.e. PCB 86).

- indicates a redundant concentration from the co-elution set and should not be included in data summation (i.e. PCB 87).

ng/g - nanograms per gram

Attachment A

Analytical Laboratory Reports

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-33598-1

Client Project/Site: 0055364, Devils Swamp

For:

Conestoga-Rovers & Associates, Inc.

9033 Meridian Way

West Chester, Ohio 45069

Attn: Deborah Brennan



Authorized for release by:

8/1/2014 3:19:15 PM

Jill Colussy, Project Manager I

(412)963-2444

jill.colussy@testamericainc.com

LINKS

Review your project
results through

TotalAccess

Have a Question?



Visit us at:

www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Laboratory: TestAmerica Pittsburgh

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-15
California	NELAP	9	4224CA	03-31-14 *
Connecticut	State Program	1	PH-0688	09-30-14
Florida	NELAP	4	E871008	06-30-15
Illinois	NELAP	5	002602	06-30-15
Kansas	NELAP	7	E-10350	01-31-15
Louisiana	NELAP	6	04041	06-30-15
New Hampshire	NELAP	1	203011	04-04-15
New Jersey	NELAP	2	PA005	06-30-15
New York	NELAP	2	11182	03-31-15
North Carolina (WW/SW)	State Program	4	434	12-31-14
Pennsylvania	NELAP	3	02-00416	04-30-15
South Carolina	State Program	4	89014	04-30-14 *
Texas	NELAP	6	T104704528	03-31-15
US Fish & Wildlife	Federal		LE94312A-1	11-30-14
USDA	Federal		P330-10-00139	05-23-16
Utah	NELAP	8	STLP	05-31-15
Virginia	NELAP	3	460189	09-14-14
West Virginia DEP	State Program	3	142	01-31-15
Wisconsin	State Program	5	998027800	08-31-14

Laboratory: TestAmerica Burlington

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0751	09-30-15
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	NA	02-13-15
Florida	NELAP	4	E87467	06-30-15
L-A-B	DoD ELAP		L2336	02-26-17
Louisiana	NELAP	6	176292	06-30-14
Maine	State Program	1	VT00008	04-17-15
Minnesota	NELAP	5	050-999-436	12-31-14
New Hampshire	NELAP	1	2006	12-18-14
New Jersey	NELAP	2	VT972	06-30-15
New York	NELAP	2	10391	03-31-15
Pennsylvania	NELAP	3	68-00489	04-30-15
Rhode Island	State Program	1	LAO00298	12-30-14
US Fish & Wildlife	Federal		LE-058448-0	02-28-15
USDA	Federal		P330-11-00093	10-28-16
Vermont	State Program	1	VT-4000	12-31-14
Virginia	NELAP	3	460209	12-14-14

* Certification renewal pending - certification considered valid.

TestAmerica Pittsburgh

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-33598-1	055364-T2-060414-FT-CRAWFISH-20	Tissue	06/04/14 09:04	06/05/14 09:30
180-33598-2	055364-T2-060214-FT-CRAWFISH-21	Tissue	06/02/14 08:35	06/05/14 09:30
180-33598-3	055364-T2-060414-SE-COMP-1	Sediment	06/04/14 11:55	06/05/14 09:30
180-33598-4	055364-T2-060414-SE-COMP-2	Sediment	06/04/14 12:10	06/05/14 09:30
180-33598-5	055364-T2-060414-SE-EB-1	Water	06/04/14 12:20	06/05/14 09:30

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Method	Method Description	Protocol	Laboratory
2540G	SM 2540G	SM22	TAL PIT
Lipids	Percent Lipids	TestAmerica SOP	TAL PIT
Lloyd Kahn	Organic Carbon, Total (TOC)	EPA	TAL PIT
SM 5310C	TOC	SM	TAL PIT
D422	Grain Size	ASTM	TAL BUR

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater",

SM22 = SM22

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

Laboratory References:

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Client Sample ID: 055364-T2-060414-FT-CRAWFISH-20

Date Collected: 06/04/14 09:04

Date Received: 06/05/14 09:30

Lab Sample ID: 180-33598-1

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			108089	06/10/14 10:29	AJB	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Pre Prep	In House					108010	06/09/14 13:00	LWM	TAL PIT
Total/NA	Pre Prep	Frozen Storage					108007	06/09/14 13:00	LWM	TAL PIT
Total/NA	Analysis	Lipids		1	10.0 g	10.0 mL	108945	06/17/14 03:30	MTW	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	3541			10.0 g	10.0 mL	108702	06/17/14 03:30	BAP	TAL PIT

Client Sample ID: 055364-T2-060214-FT-CRAWFISH-21

Date Collected: 06/02/14 08:35

Date Received: 06/05/14 09:30

Lab Sample ID: 180-33598-2

Matrix: Tissue

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			108089	06/10/14 10:29	AJB	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Pre Prep	In House					108010	06/09/14 13:00	LWM	TAL PIT
Total/NA	Pre Prep	Frozen Storage					108007	06/09/14 13:00	LWM	TAL PIT
Total/NA	Analysis	Lipids		1	10.0 g	10.0 mL	108945	06/17/14 03:30	MTW	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	3541			10.0 g	10.0 mL	108702	06/17/14 03:30	BAP	TAL PIT

Client Sample ID: 055364-T2-060414-SE-COMP-1

Date Collected: 06/04/14 11:55

Date Received: 06/05/14 09:30

Lab Sample ID: 180-33598-3

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			108033	06/09/14 17:02	AJB	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	Lloyd Kahn		1			108410	06/12/14 18:11	JDD	TAL PIT
		Instrument ID: FLASHEA								
Total/NA	Analysis	D422		1	78.94 g		73602	06/10/14 19:36	SML	TAL BUR
		Instrument ID: D422_import								

Client Sample ID: 055364-T2-060414-SE-COMP-2

Date Collected: 06/04/14 12:10

Date Received: 06/05/14 09:30

Lab Sample ID: 180-33598-4

Matrix: Sediment

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			108033	06/09/14 17:02	AJB	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	Lloyd Kahn		1			109156	06/16/14 13:07	JDD	TAL PIT
		Instrument ID: FLASHEA								

TestAmerica Pittsburgh

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Client Sample ID: 055364-T2-060414-SE-COMP-2

Lab Sample ID: 180-33598-4

Date Collected: 06/04/14 12:10

Matrix: Sediment

Date Received: 06/05/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D422		1	78.05 g		73602	06/10/14 19:39	SML	TAL BUR
Instrument ID: D422_import										

Client Sample ID: 055364-T2-060414-SE-EB-1

Lab Sample ID: 180-33598-5

Date Collected: 06/04/14 12:20

Matrix: Water

Date Received: 06/05/14 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	SM 5310C		1			108297	06/11/14 19:17	CLL	TAL PIT
Instrument ID: TOC1030										

Laboratory References:

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Analyst References:

Lab: TAL BUR

Batch Type: Analysis

SML = Scott Lavigne

Lab: TAL PIT

Batch Type: Pre Prep

LWM = Larry Matko

Batch Type: Prep

BAP = Brian Pino

Batch Type: Analysis

AJB = Amanda Brunick

CLL = Cheryl Loheyde

JDD = James DeRubeis

MTW = Michael Wesoloski

TestAmerica Pittsburgh

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Client Sample ID: 055364-T2-060414-FT-CRAWFISH-20

Lab Sample ID: 180-33598-1

Date Collected: 06/04/14 09:04

Matrix: Tissue

Date Received: 06/05/14 09:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	72		0.10	0.10	%			06/10/14 10:29	1
Percent Lipids	1.8		0.10	0.030	%		06/17/14 03:30	06/17/14 03:30	1

Client Sample ID: 055364-T2-060214-FT-CRAWFISH-21

Lab Sample ID: 180-33598-2

Date Collected: 06/02/14 08:35

Matrix: Tissue

Date Received: 06/05/14 09:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	75		0.10	0.10	%			06/10/14 10:29	1
Percent Lipids	1.4		0.10	0.030	%		06/17/14 03:30	06/17/14 03:30	1

Client Sample ID: 055364-T2-060414-SE-COMP-1

Lab Sample ID: 180-33598-3

Date Collected: 06/04/14 11:55

Matrix: Sediment

Date Received: 06/05/14 09:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	23		0.10	0.10	%			06/09/14 17:02	1
Total Organic Carbon - Duplicates	270	J	1300	120	mg/Kg	✱		06/12/14 18:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			06/10/14 19:36	1
Sieve Size 3 inch - Percent Finer	100.0				% Passing			06/10/14 19:36	1
Sand	14.9				%			06/10/14 19:36	1
Sieve Size 2 inch - Percent Finer	100.0				% Passing			06/10/14 19:36	1
Coarse Sand	0.0				%			06/10/14 19:36	1
Sieve Size 1.5 inch - Percent Finer	100.0				% Passing			06/10/14 19:36	1
Medium Sand	0.3				%			06/10/14 19:36	1
Sieve Size 1 inch - Percent Finer	100.0				% Passing			06/10/14 19:36	1
Fine Sand	14.6				%			06/10/14 19:36	1
Sieve Size 0.75 inch - Percent Finer	100.0				% Passing			06/10/14 19:36	1
Sieve Size 0.375 inch - Percent Finer	100.0				% Passing			06/10/14 19:36	1
Silt	59.9				%			06/10/14 19:36	1
Clay	25.2				%			06/10/14 19:36	1
Sieve Size #4 - Percent Finer	100.0				% Passing			06/10/14 19:36	1
Sieve Size #10 - Percent Finer	100.0				% Passing			06/10/14 19:36	1
Sieve Size #20 - Percent Finer	99.8				% Passing			06/10/14 19:36	1
Sieve Size #40 - Percent Finer	99.7				% Passing			06/10/14 19:36	1
Sieve Size #60 - Percent Finer	99.4				% Passing			06/10/14 19:36	1
Sieve Size #80 - Percent Finer	97.8				% Passing			06/10/14 19:36	1
Sieve Size #100 - Percent Finer	96.6				% Passing			06/10/14 19:36	1
Sieve Size #200 - Percent Finer	85.1				% Passing			06/10/14 19:36	1

TestAmerica Pittsburgh

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Client Sample ID: 055364-T2-060414-SE-COMP-2

Lab Sample ID: 180-33598-4

Date Collected: 06/04/14 12:10

Matrix: Sediment

Date Received: 06/05/14 09:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	28		0.10	0.10	%			06/09/14 17:02	1
Total Organic Carbon - Duplicates	1300	J	1400	120	mg/Kg	✱		06/16/14 13:07	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			06/10/14 19:39	1
Sieve Size 3 inch - Percent Finer	100.0				% Passing			06/10/14 19:39	1
Sand	5.6				%			06/10/14 19:39	1
Sieve Size 2 inch - Percent Finer	100.0				% Passing			06/10/14 19:39	1
Coarse Sand	0.7				%			06/10/14 19:39	1
Sieve Size 1.5 inch - Percent Finer	100.0				% Passing			06/10/14 19:39	1
Medium Sand	0.4				%			06/10/14 19:39	1
Sieve Size 1 inch - Percent Finer	100.0				% Passing			06/10/14 19:39	1
Fine Sand	4.5				%			06/10/14 19:39	1
Sieve Size 0.75 inch - Percent Finer	100.0				% Passing			06/10/14 19:39	1
Sieve Size 0.375 inch - Percent Finer	100.0				% Passing			06/10/14 19:39	1
Silt	58.8				%			06/10/14 19:39	1
Clay	35.6				%			06/10/14 19:39	1
Sieve Size #4 - Percent Finer	100.0				% Passing			06/10/14 19:39	1
Sieve Size #10 - Percent Finer	99.3				% Passing			06/10/14 19:39	1
Sieve Size #20 - Percent Finer	99.0				% Passing			06/10/14 19:39	1
Sieve Size #40 - Percent Finer	98.9				% Passing			06/10/14 19:39	1
Sieve Size #60 - Percent Finer	98.6				% Passing			06/10/14 19:39	1
Sieve Size #80 - Percent Finer	98.6				% Passing			06/10/14 19:39	1
Sieve Size #100 - Percent Finer	97.5				% Passing			06/10/14 19:39	1
Sieve Size #200 - Percent Finer	94.4				% Passing			06/10/14 19:39	1

Client Sample ID: 055364-T2-060414-SE-EB-1

Lab Sample ID: 180-33598-5

Date Collected: 06/04/14 12:20

Matrix: Water

Date Received: 06/05/14 09:30

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	0.46	J	1.0	0.19	mg/L			06/11/14 19:17	1

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Method: Lipids - Percent Lipids

Lab Sample ID: MB 180-108702/1-A
Matrix: Tissue
Analysis Batch: 108945

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 108702

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Lipids	ND		0.10	0.030	%		06/17/14 03:30	06/17/14 03:30	1

Lab Sample ID: LCS 180-108702/2-A
Matrix: Tissue
Analysis Batch: 108945

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 108702

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Percent Lipids	10.0	9.91		%		99	30 - 150

Lab Sample ID: LCSD 180-108702/3-A
Matrix: Tissue
Analysis Batch: 108945

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 108702

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Percent Lipids	10.0	9.79		%		98	30 - 150	1	25

Method: Lloyd Kahn - Organic Carbon, Total (TOC)

Lab Sample ID: MB 180-108410/4
Matrix: Sediment
Analysis Batch: 108410

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		1000	89	mg/Kg			06/12/14 17:24	1

Lab Sample ID: LCS 180-108410/5
Matrix: Sediment
Analysis Batch: 108410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	35000	30900		mg/Kg		88	75 - 125

Lab Sample ID: MB 180-109156/3
Matrix: Sediment
Analysis Batch: 109156

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		1000	89	mg/Kg			06/16/14 12:46	1

Lab Sample ID: LCS 180-109156/4
Matrix: Sediment
Analysis Batch: 109156

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	35000	32600		mg/Kg		93	75 - 125

TestAmerica Pittsburgh

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

Method: SM 5310C - TOC

Lab Sample ID: MB 180-108297/6

Matrix: Water

Analysis Batch: 108297

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		1.0	0.19	mg/L			06/11/14 15:26	1

Lab Sample ID: LCS 180-108297/4

Matrix: Water

Analysis Batch: 108297

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	20.0	19.9		mg/L		100	80 - 120

Lab Sample ID: LCSD 180-108297/5

Matrix: Water

Analysis Batch: 108297

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon - Duplicates	20.0	19.8		mg/L		99	80 - 120	0	20

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

General Chemistry

Pre Prep Batch: 108007

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-1	055364-T2-060414-FT-CRAWFISH-20	Total/NA	Tissue	Frozen Storage	
180-33598-2	055364-T2-060214-FT-CRAWFISH-21	Total/NA	Tissue	Frozen Storage	

Pre Prep Batch: 108010

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-1	055364-T2-060414-FT-CRAWFISH-20	Total/NA	Tissue	In House	108007
180-33598-2	055364-T2-060214-FT-CRAWFISH-21	Total/NA	Tissue	In House	108007

Analysis Batch: 108033

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-3	055364-T2-060414-SE-COMP-1	Total/NA	Sediment	2540G	
180-33598-4	055364-T2-060414-SE-COMP-2	Total/NA	Sediment	2540G	

Analysis Batch: 108089

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-1	055364-T2-060414-FT-CRAWFISH-20	Total/NA	Tissue	2540G	
180-33598-2	055364-T2-060214-FT-CRAWFISH-21	Total/NA	Tissue	2540G	

Analysis Batch: 108297

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-5	055364-T2-060414-SE-EB-1	Total/NA	Water	SM 5310C	
LCS 180-108297/4	Lab Control Sample	Total/NA	Water	SM 5310C	
LCSD 180-108297/5	Lab Control Sample Dup	Total/NA	Water	SM 5310C	
MB 180-108297/6	Method Blank	Total/NA	Water	SM 5310C	

Analysis Batch: 108410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-3	055364-T2-060414-SE-COMP-1	Total/NA	Sediment	Lloyd Kahn	
LCS 180-108410/5	Lab Control Sample	Total/NA	Sediment	Lloyd Kahn	
MB 180-108410/4	Method Blank	Total/NA	Sediment	Lloyd Kahn	

Prep Batch: 108702

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-1	055364-T2-060414-FT-CRAWFISH-20	Total/NA	Tissue	3541	108010
180-33598-2	055364-T2-060214-FT-CRAWFISH-21	Total/NA	Tissue	3541	108010
LCS 180-108702/2-A	Lab Control Sample	Total/NA	Tissue	3541	
LCSD 180-108702/3-A	Lab Control Sample Dup	Total/NA	Tissue	3541	
MB 180-108702/1-A	Method Blank	Total/NA	Tissue	3541	

Analysis Batch: 108945

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-1	055364-T2-060414-FT-CRAWFISH-20	Total/NA	Tissue	Lipids	108702
180-33598-2	055364-T2-060214-FT-CRAWFISH-21	Total/NA	Tissue	Lipids	108702
LCS 180-108702/2-A	Lab Control Sample	Total/NA	Tissue	Lipids	108702
LCSD 180-108702/3-A	Lab Control Sample Dup	Total/NA	Tissue	Lipids	108702
MB 180-108702/1-A	Method Blank	Total/NA	Tissue	Lipids	108702

Analysis Batch: 109156

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-4	055364-T2-060414-SE-COMP-2	Total/NA	Sediment	Lloyd Kahn	
LCS 180-109156/4	Lab Control Sample	Total/NA	Sediment	Lloyd Kahn	

TestAmerica Pittsburgh

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33598-1

General Chemistry (Continued)

Analysis Batch: 109156 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 180-109156/3	Method Blank	Total/NA	Sediment	Lloyd Kahn	

Geotechnical

Analysis Batch: 73602

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33598-3	055364-T2-060414-SE-COMP-1	Total/NA	Sediment	D422	
180-33598-4	055364-T2-060414-SE-COMP-2	Total/NA	Sediment	D422	

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 180-33598-1

Devil's Swamp

Lot #: H4F100407

Jill Colussy

TestAmerica Pittsburgh
301 Alpha Drive
Pittsburgh, PA 15238

TESTAMERICA LABORATORIES, INC.



Bruce Wagner
Project Manager

June 27, 2014

ANALYTICAL METHODS SUMMARY

H4F100407

PARAMETER	ANALYTICAL METHOD
Percent Moisture	MCAWW 160.3 MOD
PCBs, HRGC/HRMS	EPA-22 1668A

References:

EPA-22	"METHOD 1668, REVISION A: CHLORINATED BIPHENYL CONGENERS IN WATER, SOIL, SEDIMENT, AND TISSUE BY HRGC/HRMS" EPA-821-R-00-002 12/99
MCAWW	"Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SAMPLE SUMMARY

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WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
M31DW	001	055364-T2-060414-FT-CRAWFISH-20	06/04/14	09:04
M31D0	002	055364-T2-060214-FT-CRAWFISH-21	06/02/14	08:35
M31D1	003	055364-T2-060414-SE-COMP-1	06/04/14	11:55
M31D2	004	055364-T2-060414-SE-COMP-2	06/04/14	12:10
M31D3	005	055364-T2-060414-SE-EB-1	06/04/14	12:20

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

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The results reported herein are applicable to the samples submitted for analysis only. If you have any questions about this report, please call (865) 291-3000 to speak with the TestAmerica project manager listed on the cover page.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

For solid and sediments samples, when percent moisture is included in the report header field, the sample results are reported on a dry weight basis. When percent moisture is not contained in the header field, sample results are reported on an as received or wet weight basis.

Sample 055364-T2-060414-FT-CRAWFISH-20 was reported from two extractions (10.3g and 1.0g) to bring all native analytes within the calibration range.

The samples were analyzed at various dilutions to bring all native analytes within the calibration range.

Method blank M32FP1AA exhibited PCB 118 above the minimum level and method blank M32FQ1AA exhibited PCB 105 and PCB 118 above the minimum level. All associated samples were greater than twenty times the detected amounts in the blanks. The data was reported as is with no adverse affects to data quality.

Nomenclature – The standardization strategy described in this report uses the naming convention of SW-846 Method 8290. This convention differs from Method 1668 in the following manner:

Standard Addition Occurs Prior to:	Method 1668	SW-846 Conventions Used in this Report
Sampling	None	Sampling Surrogate
Extraction	Labeled Toxics/LOC/Window Defining	Internal Standard
Cleanups	Labeled Cleanup Standard	Cleanup Standard*
Injection	Labeled Injection Internal Standard	Recovery Standard

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* Cleanup Standard is also referred to as Surrogate Standard on report.

The shorthand notation used for congeners in this report is summarized in Table 2.

Qualifiers – The following flags are used to qualify results for HRMS PCB results:

J – The reported result is an estimate. The amount reported is below the Estimated Minimum Level (EML). EML is defined by the method as the lowest concentration at which an analyte can be measured reliably with common laboratory interferences present. This value has been determined for each congener by MDL and laboratory method blank studies. The value is adjusted to reflect sample specific initial and final volumes.

E – The reported result is an estimate. The amount reported is above the UCL described below.

The E qualifier is applied on the basis of the **Upper Calibration Level (UCL)**. The quantitative definition of the UCL is listed below:

Upper Calibration Level: The concentration or mass of analyte in the sample that corresponds to the highest calibration level in the initial calibration. It is equivalent to the concentration of the highest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

B – The analyte is present in the associated method blank at a reportable level. For this analysis, there is no method specified reporting level, other than the qualitative criterion that peaks must exhibit a signal-to-noise ratio of 2.5-to-1. Therefore, the presence of any amount of the analyte present in the blank will result a B qualifier on all associated samples.

Note: Some laboratories do not report contamination in the blank unless it is above their lower calibration limit, or an established percentage of the level in the samples, or an established percentage of the regulatory limit. Likewise, some laboratories set a reporting limit at one half the lower calibration limit.

Q – Estimated maximum possible concentration. This qualifier is used when the result is generated from chromatographic data that does not meet all the qualitative criteria for a positive identification given in the method. The criteria include the following areas:

- Ion abundance ratios must be within specified limits (+/-15% of theoretical ion abundance ratio.)
- Retention time criteria (relative to the method-specified isotope labeled retention time standard).
- Co-maximization criterion. The two quantitation ion peaks must reach their maxima within 2 seconds of each other.

S – Ion suppression evident. The trace indicating the signal from the lock mass of the calibration compound shows a deflection at the retention time of the analyte. This may indicate a temporary suppression of the instrument sensitivity, due to a matrix-borne interference.

C – Coeluting Isomer. The isomer is known to coelute with another member of its

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homologue group, or the peak shape is shouldered, indicating the likelihood of a coeluting isomer. When the C flag is followed by a number, the number indicates the lowest numbered congener among the coelution set. For example, if 100 pg/L is detected at the retention time of PCB 156, and PCB 157 is known to coelute with PCB 156, the results will be flagged as follows:

PCB 156 100 pg/L C

PCB 157 100 pg/L C156

In certain electronic deliverables the result field for PCB 157 will be null, with "C156" appearing in the qualifier field in accordance with the CARP EDD specification.

X – Other. See explanation in narrative.

Results – The results for the analyses are summarized in the following pages. Please see comments regarding qualifiers, above. Additional information regarding qualifiers is explained in the legends at the end of each result summary. A summary of the shorthand conventions used in this report is provided in Table 2.

Detection Limits – For all analyte results a sample specific detection limit is calculated for that analyte. This is done by first determining the GC/MS peak height of the noise or interferent in the expected region of the analyte signal. This value is multiplied by the number 2.5, which serves as a safety factor. The 2.5 safety factor is disregarded if the noise present in the analyte region is a result of chemical interferences. The resulting signal response value is then used to estimate the minimum detectable analyte amount. The result is the estimated sample detection limit.

When an analyte is not detected, an ND appears in place of the result. The value in the detection limit column is the estimated detection limit for the analyte in that particular sample.

EXAMPLE CALCULATIONS

The following formulas were used for sample calculations. Examples are given for calculating the percent recovery for internal standard $^{13}\text{C}_{12}$ -PCB 1, the concentration of native PCB 1 and the EDL for PCB 1. All values used in the calculations below are typical (i.e. not extracted from a particular sample). Actual values are found on the IsoCalc Preliminary Sample Report (IPSR) at the position indicated (in parentheses, below):

INTERNAL STANDARD RECOVERY ($^{13}\text{C}_{12}$ -PCB 1)

$$\text{Percent Recovery} = \frac{\Sigma A_{\text{IS}} \cdot W_{\text{RS}}}{\Sigma A_{\text{RS}} \cdot W_{\text{IS}} \cdot \text{RRF}} \cdot 100\%$$

ΣA_{IS} = Sum of areas for the Internal Standard quantitation ions. (IPSR – Column "Area", Row "13C12-PCB 1")

W_{RS} = Mass in ng of the Recovery Standard. (IPSR – Column "Std Amt", Row "13C12-PCB 9")

ΣA_{RS} = Sum of areas for the Recovery Standard quantitation ions. (IPSR – Column "Area", Row "13C12-PCB 9")

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W_{IS} = Mass in ng of the Internal Standard. (IPSR – Column “Std Amt”, Row “13C12-PCB 1”)

RRF = Internal Standard mean relative response factor from the initial multipoint calibration. (IPSR - Column “RF”, Row “13C12-PCB 1”.)

$$\text{Substituting typical values, } \frac{1106275 \cdot 2.000 \text{ (ng)} \cdot 100\%}{1205581 \cdot 2.000 \text{ (ng)} \cdot 1.412} = 65\% \text{ Recovery}$$

NATIVE ANALYTE QUANTITATION (PCB 1)

$$\text{Conc} = \frac{\sum A_X \cdot W_{IS}}{\sum A_{IS} \cdot V \cdot 0.001 \text{ (mL/L)} \cdot \text{RRF}}$$

$\sum A_X$ = Sum of areas for analyte quantitation ions. (IPSR – Area Column “Area”, Row “PCB 1”)

W_{IS} = Mass in ng of Internal Standard. (IPSR – Column “Std Amt”, Row “13C12-PCB 1”)

$\sum A_{IS}$ = Sum areas for the Internal Standard. (IPSR – Column “Area”, Row 13C12-PCB 1)

V = Volume of sample extracted in mL. (IPSR – Header Column 2, Row “Initial Wt/Vol”)

RRF = Native analyte mean relative response factor from the initial calibration, or daily response factor as appropriate. (IPSR – Column “RF”, Row “PCB 1”)

$$\text{Substituting typical values, } \frac{8951 \cdot 2.000 \text{ (ng)}}{1106275 \cdot 2200 \text{ (mL)} \cdot 0.001 \text{ (mL/L)} \cdot 1.136} = 0.00647 \text{ ng/L} = 6.47 \text{ pg/L}$$

CALCULATION OF SAMPLE SPECIFIC ESTIMATED DETECTION LIMIT

This calculation uses the noise values found on the IsoCalc Preliminary Peak Report (IPPR), which follows the IPSR. All the other values used in the equation are found on the IPSR.)

$$\frac{\sum I_X \cdot W_{IS} \cdot T_{SN}}{\sum I_{IS} \cdot V \cdot 0.001 \text{ (mL/L)} \cdot \text{RRF}}$$

$\sum I_X$ = Sum of the intensities of the noise levels of the characteristic ions in the region of analyte elution. (IPPR – Columns “Height1” and “Height2”, Row {mass} 188, Sub-Row “Noise”).

W_{IS} = Mass in ng of the Internal Standard. (IPSR – Column “Std Amt”, Row “13C12-PCB 1”).

T_{SN} = Minimum Signal-to-Noise threshold. = 2.5. A constant, specified by the method.

$\sum I_{IS}$ = Intensity of the corresponding ^{13}C ions. (IPSR – Column “Height”, Row “13C12-PCB 9”)

V = Volume of sample extracted in mL. (IPSR – Header Column 2, Row “Initial Wt/Vol”)

RRF = Native analyte mean relative response factor from the initial calibration or daily standard as

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appropriate. (IPSR – Column "RF", Row "PCB 1")

$$\text{Substituting typical values } \frac{79 \bullet 2000 \text{ (pg)} \bullet 2.5}{334600 \bullet 2200 \text{ (mL)} \bullet 0.001 \text{ (mL/L)} \bullet 1.136} = 0.466 \text{ pg/L}$$

In sample data, peaks must have an intensity of 2.5 times the height of the background noise in order to be considered. Careful examination of the two equations above, and a bit of algebra reveals that for the concentration of the smallest peak detectable (per the EDL equation) to exactly equal the smallest peaks that are calculated, requires that the average height to area ratio obtained during the calibration must equal the area to height ratio for every peak obtained near 2.5 times the noise. When the area to height ratio on a peak in a sample is less than the average obtained during calibration, the calculated result will correspond to a peak that would have been less than 2.5 X the noise on the calibration. This is the result of normal variability. Because the source method for the EDL (EPA 1668) does not provide for censoring of results by any other magnitude standard than being 2.5 times the noise, the laboratory does not censor at the calculated EDL. Hence, detections may be reported below the estimated detection limits.

Table 1							
Concentration of PCBs in Calibration Solutions							
Analyte Type	BZ/IUPAC ¹	CS 0.5 ng/mL	CS 1 ng/mL	CS 2 ng/mL	CS 3 ² ng/mL	CS 4 ng/mL	CS 5 ng/mL
Congeners							
2-MoCB	1	0.5	1.0	5.0	50	400	2000
4-MoCB	3	0.5	1.0	5.0	50	400	2000
2,2'-DiCB	4	0.5	1.0	5.0	50	400	2000
4,4'-DiCB	15	0.5	1.0	5.0	50	400	2000
2,2',6'-TrCB	19	0.5	1.0	5.0	50	400	2000
3,4,4'-TrCB	37	0.5	1.0	5.0	50	400	2000
2,2',6,6'-TeCB	54	0.5	1.0	5.0	50	400	2000
3,3',4,4'-TeCB	77	0.5	1.0	5.0	50	400	2000
3,4,4',5-TeCB	81	0.5	1.0	5.0	50	400	2000
2,2',4,6,6'-PeCB	104	0.5	1.0	5.0	50	400	2000
2,3,3',4,4'-PeCB	105	0.5	1.0	5.0	50	400	2000
2,3,4,4',5-PeCB	114	0.5	1.0	5.0	50	400	2000
2',3,4,4',5-PeCB	118	0.5	1.0	5.0	50	400	2000
2',3,4,4',5-PeCB	123	0.5	1.0	5.0	50	400	2000
3,3',4,4',5-PeCB	126	0.5	1.0	5.0	50	400	2000
2,2',4,4',6,6'-HxCB	155	0.5	1.0	5.0	50	400	2000
2,3,3',4,4',5-HxCB	156	0.5	1.0	5.0	50	400	2000
2,3,3',4,4',5'-HxCB	157	0.5	1.0	5.0	50	400	2000
2,3',4,4',5,5'-HxCB	167	0.5	1.0	5.0	50	400	2000
3,3',4,4',5,5'-HxCB	169	0.5	1.0	5.0	50	400	2000
2,2',3,4',5,6,6'-HpCB	188	0.5	1.0	5.0	50	400	2000
2,3,3',4,4',5,5'-HpCB	189	0.5	1.0	5.0	50	400	2000
2,2',3,3',5,5',6,6'-OcCB	202	0.5	1.0	5.0	50	400	2000
2,3,3',4,4',5,5',6-OcCB	205	0.5	1.0	5.0	50	400	2000
2,2',3,3',4,4',5,5',6-NoCB	206	0.5	1.0	5.0	50	400	2000
2,2',3,3',4,4',5,5',6,6'-NoCB	208	0.5	1.0	5.0	50	400	2000
DeCB	209	0.5	1.0	5.0	50	400	2000
All other CB congeners		0.5	1.0	5.0	50	400	2000
Labeled Congeners							
¹³ C ₁₂ -2-MoCB	1L	100	100	100	100	100	100

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Table 1							
Concentration of PCBs in Calibration Solutions							
Analyte Type	BZ/IUPAC ¹	CS 0.5 ng/mL	CS 1 ng/mL	CS 2 ng/mL	CS 3 ² ng/mL	CS 4 ng/mL	CS 5 ng/mL
¹³ C ₁₂ -4-MoCB	3L	100	100	100	100	100	100
¹³ C ₁₂ -2,2'-DiCB	4L	100	100	100	100	100	100
¹³ C ₁₂ -4,4'-DiCB	15L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',6-TrCB	19L	100	100	100	100	100	100
¹³ C ₁₂ -3,4,4'-TrCB	37L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',6,6'-TeCB	54L	100	100	100	100	100	100
¹³ C ₁₂ -3,3',4,4'-TeCB	77L	100	100	100	100	100	100
¹³ C ₁₂ -3,4,4',5-TeCB	81L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',4,6,6'-PeCB	104L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4'-PeCB	105L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,4,4',5-PeCB	114L	100	100	100	100	100	100
¹³ C ₁₂ -2,3',4,4',5-PeCB	118L	100	100	100	100	100	100
¹³ C ₁₂ -2',3,4,4',5-PeCB	123L	100	100	100	100	100	100
¹³ C ₁₂ -3,3',4,4',5-PeCB	126L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',4,4',6,6'-HxCB	155L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4',5-HxCB	156L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4',5,5'-HxCB	157L	100	100	100	100	100	100
¹³ C ₁₂ -2,3',4,4',5,5'-HxCB	167L	100	100	100	100	100	100
¹³ C ₁₂ -3,3',4,4',5,5'-HxCB	169L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',4,4',5-HpCB	170L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,4',5,6,6'-HpCB	188L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4',5,5'-HpCB	189L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',5,5',6,6'-OoCB	202L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4',5,5',6-OoCB	205L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',4,4',5,5',6-NoCB	206L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',4',5,5',6,6'-NoCB	208L	100	100	100	100	100	100
¹³ C ₁₂ -DeCB	209L	100	100	100	100	100	100
Cleanup Standards							
¹³ C ₁₂ -2,4,4'-TriCB	28L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -2,3,3',5,5'-PeCB	111L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -2,2',3,3',5,5',6-HpCB	178L	0.5	1.0	5.0	50	400	--
Recovery Standards							
¹³ C ₁₂ -2,5-DiCB	9L	100	100	100	100	100	100
¹³ C ₁₂ -2,4',5-TriCB	31L	100	100	100	100	100	100
¹³ C ₁₂ -2,4',6-TriCB	32L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',5,5'-TeCB	52L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',4',5,5'-PeCB	101L	100	100	100	100	100	100
¹³ C ₁₂ -3,3',4,5,5'-PeCB	127L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3',4,4',5'-HxCB	138L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,4,4',5,5'-HpCB	180L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',4,4',5,5'-OoCB	194L	100	100	100	100	100	100
Labeled Sampling Surrogates							
¹³ C ₁₂ -2,4'-DiCB	8L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -3,3',4,5'-TeCB	79L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -2,2',3,5',6-PeCB	95L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -2,2',4,4',5,5'-HxCB	153L	0.5	1.0	5.0	50	400	--

1. Suffix "L" indicates labeled compound.

2. Calibration verification solution.

PROJECT NARRATIVE

H4F100407

Table 2

PCB Shorthand Nomenclature⁴ Used in this Report

BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry Number ³	BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry Number ³
1	2-monochlorobiphenyl	2051-60-7	106	2,3,3',4,5-pentachlorobiphenyl	70424-69-0
2	3-monochlorobiphenyl	2051-61-8	107/109	2,3,3',4',5-pentachlorobiphenyl	70424-68-9
3	4-monochlorobiphenyl	2051-62-9	108/107	2,3,3',4,5'-pentachlorobiphenyl	70362-41-3
4	2,2'-dichlorobiphenyl	13029-08-8	109/108	2,3,3',4,6-pentachlorobiphenyl	74472-35-8
5	2,3-dichlorobiphenyl	16605-91-7	110	2,3,3',4',6-pentachlorobiphenyl	38380-03-9
6	2,3'-dichlorobiphenyl	25569-80-6	111	2,3,3',5,5'-pentachlorobiphenyl	39635-32-0
7	2,4-dichlorobiphenyl	33284-50-3	112	2,3,3',5,6-pentachlorobiphenyl	74472-36-9
8	2,4'-dichlorobiphenyl	34883-43-7	113	2,3,3',5',6-pentachlorobiphenyl	68194-10-5
9	2,5-dichlorobiphenyl	34883-39-1	114	2,3,4,4',5-pentachlorobiphenyl	74472-37-0
10	2,6-dichlorobiphenyl	33146-45-1	115	2,3,4,4',6-pentachlorobiphenyl	74472-38-1
11	3,3'-dichlorobiphenyl	2050-67-1	116	2,3,4,5,6-pentachlorobiphenyl	18259-05-7
12	3,4-dichlorobiphenyl	2974-92-7	117	2,3,4',5,6-pentachlorobiphenyl	68194-11-6
13	3,4'-dichlorobiphenyl	2974-90-5	118	2,3',4,4',5-pentachlorobiphenyl	31508-00-6
14	3,5-dichlorobiphenyl	34883-41-5	119	2,3',4,4',6-pentachlorobiphenyl	56558-17-9
15	4,4'-dichlorobiphenyl	2050-68-2	120	2,3',4,5,5'-pentachlorobiphenyl	68194-12-7
16	2,2',3-trichlorobiphenyl	38444-78-9	121	2,3',4,5',6-pentachlorobiphenyl	56558-18-0
17	2,2',4-trichlorobiphenyl	37680-66-3	122	2',3,3',4,5-pentachlorobiphenyl (2,3,3',4',5'-pentachlorobiphenyl)	76842-07-4
18	2,2',5-trichlorobiphenyl	37680-65-2	123	2',3,4,4',5-pentachlorobiphenyl (2,3',4,4',5'-pentachlorobiphenyl)	65510-44-3
19	2,2',6-trichlorobiphenyl	38444-73-4	124	2',3,4,5,5'-pentachlorobiphenyl (2,3',4',5',5'-pentachlorobiphenyl)	70424-70-3
20	2,3,3'-trichlorobiphenyl	38444-84-7	125	2',3,4,5,6'-pentachlorobiphenyl (2,3',4',5',6'-pentachlorobiphenyl)	74472-39-2
21	2,3,4-trichlorobiphenyl	55702-46-0	126	3,3',4,4',5-pentachlorobiphenyl	57465-28-8
22	2,3,4'-trichlorobiphenyl	38444-85-8	127	3,3',4,5,5'-pentachlorobiphenyl	39635-33-1
23	2,3,5-trichlorobiphenyl	55720-44-0	128	2,2',3,3',4,4'-hexachlorobiphenyl	38380-07-3
24	2,3,6-trichlorobiphenyl	55702-45-9	129	2,2',3,3',4,5-hexachlorobiphenyl	55215-18-4
25	2,3',4-trichlorobiphenyl	55712-37-3	130	2,2',3,3',4,5'-hexachlorobiphenyl	52663-66-8
26	2,3',5-trichlorobiphenyl	38444-81-4	131	2,2',3,3',4,6-hexachlorobiphenyl	61798-70-7
27	2,3',6-trichlorobiphenyl	38444-76-7	132	2,2',3,3',4,6'-hexachlorobiphenyl	38380-05-1
28	2,4,4'-trichlorobiphenyl	7012-37-5	133	2,2',3,3',5,5'-hexachlorobiphenyl	35694-04-3
29	2,4,5-trichlorobiphenyl	15862-07-4	134	2,2',3,3',5,6-hexachlorobiphenyl	52704-70-8
30	2,4,6-trichlorobiphenyl	35693-92-6	135	2,2',3,3',5,6'-hexachlorobiphenyl	52744-13-5
31	2,4',5-trichlorobiphenyl	16606-02-3	136	2,2',3,3',6,6'-hexachlorobiphenyl	38411-22-2
32	2,4',6-trichlorobiphenyl	38444-77-8	137	2,2',3,4,4',5-hexachlorobiphenyl	35694-06-5
33	2',3,4-trichlorobiphenyl (2,3',4'-trichlorobiphenyl)	38444-86-9	138	2,2',3,4,4',5'-hexachlorobiphenyl	35065-28-2
34	2',3,5-trichlorobiphenyl (2,3',5'-trichlorobiphenyl)	37680-68-5	139	2,2',3,4,4',6-hexachlorobiphenyl	56030-56-9
35	3,3',4-trichlorobiphenyl	37680-69-6	140	2,2',3,4,4',6'-hexachlorobiphenyl	59291-64-4
36	3,3',5-trichlorobiphenyl	38444-87-0	141	2,2',3,4,5,5'-hexachlorobiphenyl	52712-04-6
37	3,4,4'-trichlorobiphenyl	38444-90-5	142	2,2',3,4,5,6-hexachlorobiphenyl	41411-61-4
38	3,4,5-trichlorobiphenyl	53555-66-1	143	2,2',3,4,5,6'-hexachlorobiphenyl	68194-15-0
39	3,4',5-trichlorobiphenyl	38444-88-1	144	2,2',3,4,5',6-hexachlorobiphenyl	68194-14-9
40	2,2',3,3'-tetrachlorobiphenyl	38444-93-8	145	2,2',3,4,6,6'-hexachlorobiphenyl	74472-40-5
41	2,2',3,4-tetrachlorobiphenyl	52663-59-9	146	2,2',3,4',5,5'-hexachlorobiphenyl	51908-16-8
42	2,2',3,4'-tetrachlorobiphenyl	36559-22-5	147	2,2',3,4',5,6-hexachlorobiphenyl	68194-13-8
43	2,2',3,5-tetrachlorobiphenyl	70362-46-8	148	2,2',3,4',5,6'-hexachlorobiphenyl	74472-41-6
44	2,2',3,5'-tetrachlorobiphenyl	41464-39-5	149	2,2',3,4',5',6-hexachlorobiphenyl	38380-04-0
45	2,2',3,6-tetrachlorobiphenyl	70362-45-7	150	2,2',3,4',6,6'-hexachlorobiphenyl	68194-08-1

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Table 2

PCB Shorthand Nomenclature⁴ Used in this Report

BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry Number ³	BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry Number ³
46	2,2',3,6'-tetrachlorobiphenyl	41464-47-5	151	2,2',3,5,5',6-hexachlorobiphenyl	52663-63-5
47	2,2',4,4'-tetrachlorobiphenyl	2437-79-8	152	2,2',3,5,6,6'-hexachlorobiphenyl	68194-09-2
48	2,2',4,5'-tetrachlorobiphenyl	70362-47-9	153	2,2',4,4',5,5'-hexachlorobiphenyl	35065-27-1
49	2,2',4,5'-tetrachlorobiphenyl	41464-40-8	154	2,2',4,4',5,6'-hexachlorobiphenyl	60145-22-4
50	2,2',4,6'-tetrachlorobiphenyl	62796-65-0	155	2,2',4,4',6,6'-hexachlorobiphenyl	33979-03-2
51	2,2',4,6'-tetrachlorobiphenyl	68194-04-7	156	2,3,3',4,4',5-hexachlorobiphenyl	38380-08-4
52	2,2',5,5'-tetrachlorobiphenyl	35693-99-3	157	2,3,3',4,4',5'-hexachlorobiphenyl	69782-90-7
53	2,2',5,6'-tetrachlorobiphenyl	41464-41-9	158	2,3,3',4,4',6-hexachlorobiphenyl	74472-42-7
54	2,2',6,6'-tetrachlorobiphenyl	15968-05-5	159	2,3,3',4,5,5'-hexachlorobiphenyl	39635-35-3
55	2,3,3',4-tetrachlorobiphenyl	74338-24-2	160	2,3,3',4,5,6-hexachlorobiphenyl	41411-62-5
56	2,3,3',4'-tetrachlorobiphenyl	41464-43-1	161	2,3,3',4,5',6-hexachlorobiphenyl	74472-43-8
57	2,3,3',5-tetrachlorobiphenyl	70424-67-8	162	2,3,3',4',5,5'-hexachlorobiphenyl	39635-34-2
58	2,3,3',5'-tetrachlorobiphenyl	41464-49-7	163	2,3,3',4',5,6-hexachlorobiphenyl	74472-44-9
59	2,3,3',6-tetrachlorobiphenyl	74472-33-6	164	2,3,3',4',5',6-hexachlorobiphenyl	74472-45-0
60	2,3,4,4'-tetrachlorobiphenyl	33025-41-1	165	2,3,3',5,5',6-hexachlorobiphenyl	74472-46-1
61	2,3,4,5-tetrachlorobiphenyl	33284-53-6	166	2,3,4,4',5,6-hexachlorobiphenyl	41411-63-6
62	2,3,4,6-tetrachlorobiphenyl	54230-22-7	167	2,3',4,4',5,5'-hexachlorobiphenyl	52663-72-6
63	2,3,4',5-tetrachlorobiphenyl	74472-34-7	168	2,3',4,4',5',6-hexachlorobiphenyl	59291-65-5
64	2,3,4',6-tetrachlorobiphenyl	52663-58-8	169	3,3',4,4',5,5'-hexachlorobiphenyl	32774-16-6
65	2,3,5,6-tetrachlorobiphenyl	33284-54-7	170	2,2',3,3',4,4',5-heptachlorobiphenyl	35065-30-6
66	2,3',4,4'-tetrachlorobiphenyl	32598-10-0	171	2,2',3,3',4,4',6-heptachlorobiphenyl	52663-71-5
67	2,3',4,5-tetrachlorobiphenyl	73575-53-8	172	2,2',3,3',4,5,5'-heptachlorobiphenyl	52663-74-8
68	2,3',4,5'-tetrachlorobiphenyl	73575-52-7	173	2,2',3,3',4,5,6-heptachlorobiphenyl	68194-16-1
69	2,3',4,6-tetrachlorobiphenyl	60233-24-1	174	2,2',3,3',4,5,6'-heptachlorobiphenyl	38411-25-5
70	2,3',4',5-tetrachlorobiphenyl	32598-11-1	175	2,2',3,3',4,5',6-heptachlorobiphenyl	40186-70-7
71	2,3',4',6-tetrachlorobiphenyl	41464-46-4	176	2,2',3,3',4,6,6'-heptachlorobiphenyl	52663-65-7
72	2,3',5,5'-tetrachlorobiphenyl	41464-42-0	177	2,2',3,3',4',5,6-heptachlorobiphenyl (2,2',3,3',4,5',6'-heptachlorobiphenyl)	52663-70-4
73	2,3',5',6-tetrachlorobiphenyl	74338-23-1	178	2,2',3,3',5,5',6-heptachlorobiphenyl	52663-67-9
74	2,4,4',5-tetrachlorobiphenyl	32690-93-0	179	2,2',3,3',5,6,6'-heptachlorobiphenyl	52663-64-6
75	2,4,4',6-tetrachlorobiphenyl	32598-12-2	180	2,2',3,4,4',5,5'-heptachlorobiphenyl	35065-29-3
76	2',3,4,5-tetrachlorobiphenyl (2,3',4',5'-tetrachlorobiphenyl)	70362-48-0	181	2,2',3,4,4',5,6-heptachlorobiphenyl	74472-47-2
77	3,3',4,4'-tetrachlorobiphenyl	32598-13-3	182	2,2',3,4,4',5,6'-heptachlorobiphenyl	60145-23-5
78	3,3',4,5-tetrachlorobiphenyl	70362-49-1	183	2,2',3,4,4',5',6-heptachlorobiphenyl	52663-69-1
79	3,3',4,5'-tetrachlorobiphenyl	41464-48-6	184	2,2',3,4,4',6,6'-heptachlorobiphenyl	74472-48-3
80	3,3',5,5'-tetrachlorobiphenyl	33284-52-5	185	2,2',3,4,5,5',6-heptachlorobiphenyl	52712-05-7
81	3,4,4',5-tetrachlorobiphenyl	70362-50-4	186	2,2',3,4,5,6,6'-heptachlorobiphenyl	74472-49-4
82	2,2',3,3',4-pentachlorobiphenyl	52663-62-4	187	2,2',3,4',5,5',6-heptachlorobiphenyl	52663-68-0
83	2,2',3,3',5-pentachlorobiphenyl	60145-20-2	188	2,2',3,4',5,6,6'-heptachlorobiphenyl	74487-85-7
84	2,2',3,3',6-pentachlorobiphenyl	52663-60-2	189	2,3,3',4,4',5,5'-heptachlorobiphenyl	39635-31-9
85	2,2',3,4,4'-pentachlorobiphenyl	65510-45-4	190	2,3,3',4,4',5,6-heptachlorobiphenyl	41411-64-7
86	2,2',3,4,5-pentachlorobiphenyl	55312-69-1	191	2,3,3',4,4',5',6-heptachlorobiphenyl	74472-50-7
87	2,2',3,4,5'-pentachlorobiphenyl	38380-02-8	192	2,3,3',4,5,5',6-heptachlorobiphenyl	74472-51-8
88	2,2',3,4,6-pentachlorobiphenyl	55215-17-3	193	2,3,3',4',5,5',6-heptachlorobiphenyl	69782-91-8
89	2,2',3,4,6'-pentachlorobiphenyl	73575-57-2	194	2,2',3,3',4,4',5,5'-octachlorobiphenyl	35694-08-7
90	2,2',3,4',5-pentachlorobiphenyl	68194-07-0	195	2,2',3,3',4,4',5,6-octachlorobiphenyl	52663-78-2
91	2,2',3,4',6-pentachlorobiphenyl	68194-05-8	196	2,2',3,3',4,4',5,6'-octachlorobiphenyl	42740-50-1
92	2,2',3,5,5'-pentachlorobiphenyl	52663-61-3	197	2,2',3,3',4,4',6,6'-octachlorobiphenyl	33091-17-7

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Table 2					
PCB Shorthand Nomenclature ⁴ Used in this Report					
BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry ³ Number	BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry ³ Number
93	2,2',3,5,6-pentachlorobiphenyl	73575-56-1	198	2,2',3,3',4,5,5',6-octachlorobiphenyl	68194-17-2
94	2,2',3,5,6'-pentachlorobiphenyl	73575-55-0	199/200	2,2',3,3',4,5,6,6'-octachlorobiphenyl	52663-73-7
95	2,2',3,5',6-pentachlorobiphenyl	38379-99-6	200/201	2,2',3,3',4,5',6,6'-octachlorobiphenyl	40186-71-8
96	2,2',3,6,6'-pentachlorobiphenyl	73575-54-9	201/199	2,2',3,3',4,5,5',6'-octachlorobiphenyl	52663-75-9
97	2,2',3',4,5-pentachlorobiphenyl (2,2',3,4',5'-pentachlorobiphenyl)	41464-51-1	202	2,2',3,3',5,5',6,6'-octachlorobiphenyl	2136-99-4
98	2,2',3',4,6-pentachlorobiphenyl (2,2',3,4',6'-pentachlorobiphenyl)	60233-25-2	203	2,2',3,4,4',5,5',6-octachlorobiphenyl	52663-76-0
99	2,2',4,4',5-pentachlorobiphenyl	38380-01-7	204	2,2',3,4,4',5,6,6'-octachlorobiphenyl	74472-52-9
100	2,2',4,4',6-pentachlorobiphenyl	39485-83-1	205	2,3,3',4,4',5,5',6-octachlorobiphenyl	74472-53-0
101	2,2',4,5,5'-pentachlorobiphenyl	37680-73-2	206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	40186-72-9
102	2,2',4,5,6-pentachlorobiphenyl	68194-06-9	207	2,2',3,3',4,4',5,6,6'-nonachlorobiphenyl	52663-79-3
103	2,2',4,5',6-pentachlorobiphenyl	60145-21-3	208	2,2',3,3',4,5,5',6,6'-nonachlorobiphenyl	52663-77-1
104	2,2',4,6,6'-pentachlorobiphenyl	56558-16-8	209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	2051-24-3
105	2,3,3',4,4'-pentachlorobiphenyl	32598-14-4			

1. The BZ number is from Ballschmiter and Zell (1980). The IUPAC number, when different from the BZ, follows the recommended changes to the BZ number per Schulte and Malisch (1983) and Guitart et al. (1993).
2. The chemical structure names are from Ballschmiter and Zell (1980). IUPAC nomenclature structure names are listed in parenthesis when different from the BZ name (source CAS Registry).
3. Chemical Abstract Service Registry number (source CAS Registry and 1668 Table 1).
4. A complete discussion of PCB Nomenclature may be found in Mills III, S.A. et al., A summary of the 209 PCB congener nomenclature, Chemosphere (2007), doi:10.1016/j.chemosphere.2007.03.052.

CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	L-A-B	DoD ELAP		L2311
TestAmerica Knoxville	Arkansas DEQ	State Program	6	88-0688
TestAmerica Knoxville	California	State Program	9	2423
TestAmerica Knoxville	Colorado	State Program	8	N/A
TestAmerica Knoxville	Connecticut	State Program	1	PH-0223
TestAmerica Knoxville	Florida	NELAC	4	E87177
TestAmerica Knoxville	Georgia	State Program	4	906
TestAmerica Knoxville	Hawaii	State Program	9	N/A
TestAmerica Knoxville	Indiana	State Program	5	C-TN-02
TestAmerica Knoxville	Iowa	State Program	7	375
TestAmerica Knoxville	Kansas	NELAC	7	E-10349
TestAmerica Knoxville	Kentucky	State Program	4	90101
TestAmerica Knoxville	Louisiana DOHH	State Program	6	LA110001
TestAmerica Knoxville	Louisiana DEQ	NELAC	6	83979
TestAmerica Knoxville	Maryland	State Program	3	277
TestAmerica Knoxville	Michigan	State Program	5	9933
TestAmerica Knoxville	Minnesota	NELAC	5	047-999-429
TestAmerica Knoxville	Nevada	State Program	9	TN00009
TestAmerica Knoxville	New Jersey	NELAC	2	TN001
TestAmerica Knoxville	New York	NELAC	2	10781
TestAmerica Knoxville	North Carolina DENR	State Program	4	64
TestAmerica Knoxville	North Carolina DHHS	State Program	4	21705
TestAmerica Knoxville	Ohio	OVAP	5	CL0059
TestAmerica Knoxville	Oklahoma	State Program	6	9415
TestAmerica Knoxville	Pennsylvania	NELAC	3	68-00576
TestAmerica Knoxville	South Carolina	State Program	4	84001
TestAmerica Knoxville	Tennessee	State Program	4	2014
TestAmerica Knoxville	Texas	NELAC	6	T104704380-TX
TestAmerica Knoxville	Federal	USDA		P330-11-00035
TestAmerica Knoxville	Utah	NELAC	8	QUAN3
TestAmerica Knoxville	Virginia	NELAC	3	460176
TestAmerica Knoxville	Virginia	State Program	3	165
TestAmerica Knoxville	Washington	State Program	10	C593
TestAmerica Knoxville	West Virginia DEP	State Program	3	345
TestAmerica Knoxville	West Virginia DHHR	State Program	3	9955C

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Sample Data Summary

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-FT-CRAWFISH-20
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 001	Work Order #....:	M31DW1AA	Matrix....:	TA
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	10
Prep Date....:	06/12/14	Analysis Date....:	06/17/14		
Prep Batch #:	4163011				
Initial Wgt/Vol :	10.3 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Patricia(Trish) M. Parsly				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	16		0.097	0.013	ng/g
PCB 81 (BZ)	0.22	Q	0.097	0.013	ng/g
PCB 126 (BZ)	1.1	Q	0.097	0.032	ng/g
PCB 123 (BZ)	17		0.097	0.025	ng/g
PCB 114 (BZ)	19		0.097	0.024	ng/g
PCB 169 (BZ)	0.30		0.097	0.027	ng/g
PCB 156 (BZ)	77	B C	0.097	0.043	ng/g
PCB 157 (BZ)	77	B C156	0.097	0.043	ng/g
PCB 167 (BZ)	24		0.097	0.025	ng/g
PCB 189 (BZ)	2.2		0.097	0.015	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-FT-CRAWFISH-20
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 001	Work Order #....:	M31DW1AA	Matrix....:	TA
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	10
Prep Date....:	06/12/14	Analysis Date....:	06/17/14		
Prep Batch #:	4163011				
Initial Wgt/Vol :	10.3 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Patricia(Trish) M. Parsly				

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	65	30 - 140
13C12-PCB 3	60	30 - 140
13C12-PCB 4	75	30 - 140
13C12-PCB 15	71	30 - 140
13C12-PCB 19	93	30 - 140
13C12-PCB 37	81	30 - 140
13C12-PCB 54	80	30 - 140
13C12-PCB 77	77	30 - 140
13C12-PCB 81	76	30 - 140
13C12-PCB 104	80	30 - 140
13C12-PCB 105	90	30 - 140
13C12-PCB 114	88	30 - 140
13C12-PCB 118	90	30 - 140
13C12-PCB 123	88	30 - 140
13C12-PCB 126	76	30 - 140
13C12-PCB 155	89	30 - 140
13C12-PCB 156	82 C	30 - 140
13C12-PCB 157	82 C	30 - 140
13C12-PCB 167	80	30 - 140
13C12-PCB 169	83	30 - 140
13C12-PCB 170	82	30 - 140
13C12-PCB 188	89	30 - 140
13C12-PCB 189	85	30 - 140
13C12-PCB 202	89	30 - 140
13C12-PCB 205	77	30 - 140
13C12-PCB 206	89	30 - 140
13C12-PCB 208	90	30 - 140
13C12-PCB 209	82	30 - 140

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	84	40 - 125
13C12-PCB 111	85	40 - 125
13C12-PCB 178	77	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-FT-CRAWFISH-20
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 001	Work Order #....:	M31DW1AA	Matrix....:	TA
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	10
Prep Date....:	06/12/14	Analysis Date....:	06/17/14		
Prep Batch #:	4163011				
Initial Wgt/Vol :	10.3 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Patricia(Trish) M. Parsly				

QUALIFIERS

- B Method blank contamination. The associated method blank contains the target analyte at a reportable level.
- C Co-eluting isomer.
- Q Estimated maximum possible concentration (EMPC).

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-FT-CRAWFISH-20
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 001	Work Order #....:	M31DW2AA	Matrix....:	TA
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	5
Prep Date....:	06/23/14	Analysis Date....:	06/25/14		
Prep Batch #:	4174018				
Initial Wgt/Vol :	1 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

<u>PARAMETER</u>	<u>RESULT</u>	<u>MINIMUM LEVEL</u>	<u>ESTIMATED DETECTION LIMIT</u>	<u>UNITS</u>
PCB 105 (BZ)	79 B	0.50	0.087	ng/g
PCB 118 (BZ)	220 B	0.50	0.084	ng/g

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	54	30 - 140
13C12-PCB 3	51	30 - 140
13C12-PCB 4	64	30 - 140
13C12-PCB 15	61	30 - 140
13C12-PCB 19	85	30 - 140
13C12-PCB 37	75	30 - 140
13C12-PCB 54	74	30 - 140
13C12-PCB 77	70	30 - 140
13C12-PCB 81	76	30 - 140
13C12-PCB 104	77	30 - 140
13C12-PCB 105	80	30 - 140
13C12-PCB 114	82	30 - 140
13C12-PCB 118	80	30 - 140
13C12-PCB 123	78	30 - 140
13C12-PCB 126	73	30 - 140
13C12-PCB 155	80	30 - 140
13C12-PCB 156	84 C	30 - 140
13C12-PCB 157	84 C	30 - 140
13C12-PCB 167	81	30 - 140
13C12-PCB 169	86	30 - 140
13C12-PCB 170	80	30 - 140
13C12-PCB 188	85	30 - 140
13C12-PCB 189	83	30 - 140
13C12-PCB 202	85	30 - 140
13C12-PCB 205	73	30 - 140
13C12-PCB 206	90	30 - 140
13C12-PCB 208	89	30 - 140
13C12-PCB 209	80	30 - 140

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-FT-CRAWFISH-20
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 001	Work Order #....:	M31DW2AA	Matrix....:	TA
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	5
Prep Date....:	06/23/14	Analysis Date....:	06/25/14		
Prep Batch #:	4174018				
Initial Wgt/Vol :	1 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	84	40 - 125
13C12-PCB 111	80	40 - 125
13C12-PCB 178	83	40 - 125

QUALIFIERS

- B Method blank contamination. The associated method blank contains the target analyte at a reportable level.
- C Co-eluting isomer.

TestAmerica Pittsburgh
Sample ID: 055364-T2-060214-FT-CRAWFISH-21
Trace Level Organic Compounds

Lot - Sample #....: H4F100407 - 002	Work Order #....: M31D01AA	Matrix....: TA
Date Sampled....: 06/02/14	Date Received....: 06/10/14	Dilution Factor: 12
Prep Date....: 06/12/14	Analysis Date....: 06/19/14	
Prep Batch #: 4163011		
Initial Wgt/Vol : 10.2 g	Instrument ID....: M1D	Method: EPA-22 1668A
Analyst ID....: Jon M. Nordquist		

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	2.6		0.12	0.012	ng/g
PCB 81 (BZ)	0.054	J	0.12	0.012	ng/g
PCB 126 (BZ)	0.27	Q	0.12	0.025	ng/g
PCB 105 (BZ)	79	B	0.12	0.018	ng/g
PCB 118 (BZ)	230	B	0.12	0.016	ng/g
PCB 123 (BZ)	5.4		0.12	0.018	ng/g
PCB 114 (BZ)	4.3		0.12	0.016	ng/g
PCB 169 (BZ)	0.062	J	0.12	0.018	ng/g
PCB 156 (BZ)	23	B C	0.12	0.029	ng/g
PCB 157 (BZ)	23	B C156	0.12	0.029	ng/g
PCB 167 (BZ)	7.1		0.12	0.016	ng/g
PCB 189 (BZ)	0.64		0.12	0.011	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-060214-FT-CRAWFISH-21
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 002	Work Order #....:	M31D01AA	Matrix....:	TA
Date Sampled....:	06/02/14	Date Received....:	06/10/14	Dilution Factor:	12
Prep Date....:	06/12/14	Analysis Date....:	06/19/14		
Prep Batch #:	4163011				
Initial Wgt/Vol :	10.2 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	54	30 - 140
13C12-PCB 3	48	30 - 140
13C12-PCB 4	72	30 - 140
13C12-PCB 15	69	30 - 140
13C12-PCB 19	81	30 - 140
13C12-PCB 37	76	30 - 140
13C12-PCB 54	75	30 - 140
13C12-PCB 77	79	30 - 140
13C12-PCB 81	77	30 - 140
13C12-PCB 104	79	30 - 140
13C12-PCB 105	85	30 - 140
13C12-PCB 114	88	30 - 140
13C12-PCB 118	85	30 - 140
13C12-PCB 123	80	30 - 140
13C12-PCB 126	72	30 - 140
13C12-PCB 155	86	30 - 140
13C12-PCB 156	82	30 - 140
13C12-PCB 157	82	30 - 140
13C12-PCB 167	85	30 - 140
13C12-PCB 169	86	30 - 140
13C12-PCB 170	82	30 - 140
13C12-PCB 188	83	30 - 140
13C12-PCB 189	88	30 - 140
13C12-PCB 202	92	30 - 140
13C12-PCB 205	78	30 - 140
13C12-PCB 206	94	30 - 140
13C12-PCB 208	87	30 - 140
13C12-PCB 209	84	30 - 140

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	83	40 - 125
13C12-PCB 111	81	40 - 125
13C12-PCB 178	82	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-060214-FT-CRAWFISH-21
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 002	Work Order #....:	M31D01AA	Matrix....:	TA
Date Sampled....:	06/02/14	Date Received....:	06/10/14	Dilution Factor:	12
Prep Date....:	06/12/14	Analysis Date....:	06/19/14		
Prep Batch #:	4163011				
Initial Wgt/Vol :	10.2 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

QUALIFIERS

- B Method blank contamination. The associated method blank contains the target analyte at a reportable level.
- C Co-eluting isomer.
- J Estimated Result.
- Q Estimated maximum possible concentration (EMPC).

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-SE-COMP-1
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 003	Work Order #....:	M31D11AD	Matrix....:	SE
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	1
Prep Date....:	06/12/14	Analysis Date....:	06/17/14	Percent Moisture	25
Prep Batch #:	4163010				
Initial Wgt/Vol :	13.8 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Patricia(Trish) M. Parsly				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	0.0056	Q J	0.0096	0.00071	ng/g
PCB 81 (BZ)	0.00078	Q J	0.0096	0.00066	ng/g
PCB 126 (BZ)	0.0021	Q J	0.0096	0.0010	ng/g
PCB 105 (BZ)	0.13	B	0.0096	0.00086	ng/g
PCB 118 (BZ)	0.45	B	0.0096	0.00085	ng/g
PCB 123 (BZ)	0.0089	Q J	0.0096	0.00089	ng/g
PCB 114 (BZ)	0.0073	Q J	0.0096	0.00080	ng/g
PCB 169 (BZ)	0.0012	Q J	0.0096	0.00076	ng/g
PCB 156 (BZ)	0.068	B C	0.0096	0.0015	ng/g
PCB 157 (BZ)	0.068	B C156	0.0096	0.0015	ng/g
PCB 167 (BZ)	0.022		0.0096	0.00079	ng/g
PCB 189 (BZ)	0.0060	J	0.0096	0.00058	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-SE-COMP-1
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 003	Work Order #....:	M31D11AD	Matrix....:	SE
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	1
Prep Date....:	06/12/14	Analysis Date....:	06/17/14	Percent Moisture	25
Prep Batch #:	4163010				
Initial Wgt/Vol :	13.8 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Patricia(Trish) M. Parsly				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	57	30 - 140
13C12-PCB 3	51	30 - 140
13C12-PCB 4	67	30 - 140
13C12-PCB 15	62	30 - 140
13C12-PCB 19	83	30 - 140
13C12-PCB 37	79	30 - 140
13C12-PCB 54	80	30 - 140
13C12-PCB 77	75	30 - 140
13C12-PCB 81	73	30 - 140
13C12-PCB 104	83	30 - 140
13C12-PCB 105	85	30 - 140
13C12-PCB 114	86	30 - 140
13C12-PCB 118	83	30 - 140
13C12-PCB 123	83	30 - 140
13C12-PCB 126	81	30 - 140
13C12-PCB 155	91	30 - 140
13C12-PCB 156	87	30 - 140
13C12-PCB 157	87	30 - 140
13C12-PCB 167	90	30 - 140
13C12-PCB 169	96	30 - 140
13C12-PCB 170	87	30 - 140
13C12-PCB 188	88	30 - 140
13C12-PCB 189	87	30 - 140
13C12-PCB 202	96	30 - 140
13C12-PCB 205	81	30 - 140
13C12-PCB 206	99	30 - 140
13C12-PCB 208	92	30 - 140
13C12-PCB 209	87	30 - 140

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	85	40 - 125
13C12-PCB 111	87	40 - 125
13C12-PCB 178	86	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-SE-COMP-1
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 003	Work Order #....:	M31D11AD	Matrix....:	SE
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	1
Prep Date....:	06/12/14	Analysis Date....:	06/17/14	Percent Moisture	25
Prep Batch #:	4163010				
Initial Wgt/Vol :	13.8 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Patricia(Trish) M. Parsly				

Sample results, minimum levels, and estimated detection limits are reported on a dry weight basis and have been adjusted for percent moisture.

QUALIFIERS

- B Method blank contamination. The associated method blank contains the target analyte at a reportable level.
- C Co-eluting isomer.
- J Estimated Result.
- Q Estimated maximum possible concentration (EMPC).

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-SE-COMP-2
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 004	Work Order #....:	M31D21AD	Matrix....:	SE
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	10
Prep Date....:	06/12/14	Analysis Date....:	06/17/14	Percent Moisture	30
Prep Batch #:	4163010				
Initial Wgt/Vol :	2.9 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	18		0.49	0.12	ng/g
PCB 81 (BZ)	0.45	Q J	0.49	0.12	ng/g
PCB 126 (BZ)	1.8		0.49	0.18	ng/g
PCB 105 (BZ)	270	B	0.49	0.16	ng/g
PCB 118 (BZ)	620	B	0.49	0.14	ng/g
PCB 123 (BZ)	11	Q	0.49	0.15	ng/g
PCB 114 (BZ)	9.4		0.49	0.14	ng/g
PCB 169 (BZ)	0.41	J	0.49	0.11	ng/g
PCB 156 (BZ)	83	B C	0.49	0.20	ng/g
PCB 157 (BZ)	83	B C156	0.49	0.20	ng/g
PCB 167 (BZ)	22		0.49	0.11	ng/g
PCB 189 (BZ)	3.0		0.49	0.071	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-SE-COMP-2
Trace Level Organic Compounds

Lot - Sample #....: H4F100407 - 004	Work Order #....: M31D21AD	Matrix....: SE
Date Sampled....: 06/04/14	Date Received....: 06/10/14	Dilution Factor: 10
Prep Date....: 06/12/14	Analysis Date....: 06/17/14	Percent Moisture 30
Prep Batch #: 4163010		
Initial Wgt/Vol : 2.9 g	Instrument ID....: M1D	Method: EPA-22 1668A
Analyst ID....: Jon M. Nordquist		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	63	30 - 140
13C12-PCB 3	56	30 - 140
13C12-PCB 4	83	30 - 140
13C12-PCB 15	72	30 - 140
13C12-PCB 19	91	30 - 140
13C12-PCB 37	83	30 - 140
13C12-PCB 54	84	30 - 140
13C12-PCB 77	81	30 - 140
13C12-PCB 81	73	30 - 140
13C12-PCB 104	90	30 - 140
13C12-PCB 105	89	30 - 140
13C12-PCB 114	94	30 - 140
13C12-PCB 118	91	30 - 140
13C12-PCB 123	86	30 - 140
13C12-PCB 126	83	30 - 140
13C12-PCB 155	103	30 - 140
13C12-PCB 156	92 C	30 - 140
13C12-PCB 157	92 C	30 - 140
13C12-PCB 167	91	30 - 140
13C12-PCB 169	92	30 - 140
13C12-PCB 170	92	30 - 140
13C12-PCB 188	95	30 - 140
13C12-PCB 189	90	30 - 140
13C12-PCB 202	102	30 - 140
13C12-PCB 205	82	30 - 140
13C12-PCB 206	101	30 - 140
13C12-PCB 208	99	30 - 140
13C12-PCB 209	91	30 - 140

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	89	40 - 125
13C12-PCB 111	90	40 - 125
13C12-PCB 178	87	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-SE-COMP-2
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 004	Work Order #....:	M31D21AD	Matrix....:	SE
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	10
Prep Date....:	06/12/14	Analysis Date....:	06/17/14	Percent Moisture	30
Prep Batch #:	4163010				
Initial Wgt/Vol :	2.9 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

Sample results, minimum levels, and estimated detection limits are reported on a dry weight basis and have been adjusted for percent moisture.

QUALIFIERS

- B Method blank contamination. The associated method blank contains the target analyte at a reportable level.
- C Co-eluting isomer.
- J Estimated Result.
- Q Estimated maximum possible concentration (EMPC).

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-SE-EB-1
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 005	Work Order #....:	M31D31AA	Matrix....:	WS
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	1
Prep Date....:	06/11/14	Analysis Date....:	06/13/14		
Prep Batch #:	4162013				
Initial Wgt/Vol :	1051 mL	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT	MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	ND	0.038	0.0010	ng/L
PCB 81 (BZ)	ND	0.038	0.0010	ng/L
PCB 105 (BZ)	ND	0.038	0.0012	ng/L
PCB 114 (BZ)	ND	0.038	0.0011	ng/L
PCB 118 (BZ)	ND	0.038	0.0012	ng/L
PCB 123 (BZ)	ND	0.038	0.0013	ng/L
PCB 126 (BZ)	ND	0.038	0.0014	ng/L
PCB 156 (BZ)	ND	0.038	0.0021	ng/L
PCB 157 (BZ)	ND	0.038	0.0021	ng/L
PCB 167 (BZ)	ND	0.038	0.0011	ng/L
PCB 169 (BZ)	ND	0.038	0.0011	ng/L
PCB 189 (BZ)	ND	0.038	0.0011	ng/L

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-SE-EB-1
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 005	Work Order #....:	M31D31AA	Matrix....:	WS
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	1
Prep Date....:	06/11/14	Analysis Date....:	06/13/14		
Prep Batch #:	4162013				
Initial Wgt/Vol :	1051 mL	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	51	30 - 140
13C12-PCB 3	49	30 - 140
13C12-PCB 4	59	30 - 140
13C12-PCB 15	55	30 - 140
13C12-PCB 19	63	30 - 140
13C12-PCB 37	54	30 - 140
13C12-PCB 54	54	30 - 140
13C12-PCB 77	44	30 - 140
13C12-PCB 81	42	30 - 140
13C12-PCB 104	42	30 - 140
13C12-PCB 105	43	30 - 140
13C12-PCB 114	43	30 - 140
13C12-PCB 118	41	30 - 140
13C12-PCB 123	41	30 - 140
13C12-PCB 126	41	30 - 140
13C12-PCB 155	44	30 - 140
13C12-PCB 156	42	30 - 140
13C12-PCB 157	42	30 - 140
13C12-PCB 167	45	30 - 140
13C12-PCB 169	48	30 - 140
13C12-PCB 170	43	30 - 140
13C12-PCB 188	42	30 - 140
13C12-PCB 189	43	30 - 140
13C12-PCB 202	47	30 - 140
13C12-PCB 205	40	30 - 140
13C12-PCB 206	50	30 - 140
13C12-PCB 208	48	30 - 140
13C12-PCB 209	46	30 - 140

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	84	40 - 125
13C12-PCB 111	85	40 - 125
13C12-PCB 178	80	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-SE-EB-1
Trace Level Organic Compounds

Lot - Sample #....:	H4F100407 - 005	Work Order #....:	M31D31AA	Matrix....:	WS
Date Sampled....:	06/04/14	Date Received....:	06/10/14	Dilution Factor:	1
Prep Date....:	06/11/14	Analysis Date....:	06/13/14		
Prep Batch #:	4162013				
Initial Wgt/Vol :	1051 mL	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

QUALIFIERS

C Co-eluting isomer.

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F110000 - 013B **Work Order #....:** M311J1AA **Matrix....:** WATER
Dilution Factor: 1
Prep Date....: 06/11/14 **Analysis Date....:** 06/13/14
Prep Batch #: 4162013
Initial Wgt/Vol : 1000 mL **Instrument ID....:** M1D **Method:** EPA-22 1668A
Analyst ID....: Jon M. Nordquist

PARAMETER	RESULT	MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	ND	0.040	0.0013	ng/L
PCB 81 (BZ)	ND	0.040	0.0012	ng/L
PCB 105 (BZ)	ND	0.040	0.0013	ng/L
PCB 114 (BZ)	ND	0.040	0.0012	ng/L
PCB 118 (BZ)	0.0035 Q J	0.040	0.0013	ng/L
PCB 123 (BZ)	ND	0.040	0.0015	ng/L
PCB 126 (BZ)	ND	0.040	0.0015	ng/L
PCB 156 (BZ)	ND	0.040	0.0024	ng/L
PCB 157 (BZ)	ND	0.040	0.0024	ng/L
PCB 167 (BZ)	ND	0.040	0.0013	ng/L
PCB 169 (BZ)	ND	0.040	0.0013	ng/L
PCB 189 (BZ)	ND	0.040	0.0013	ng/L

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F110000 - 013B
Dilution Factor: 1
Prep Date....: 06/11/14
Prep Batch #: 4162013
Initial Wgt/Vol : 1000 mL
Analyst ID....: Jon M. Nordquist

Work Order #....: M311J1AA

Matrix....: WATER

Analysis Date....: 06/13/14

Instrument ID....: M1D

Method: EPA-22 1668A

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	46	30 - 140
13C12-PCB 3	43	30 - 140
13C12-PCB 4	59	30 - 140
13C12-PCB 15	57	30 - 140
13C12-PCB 19	66	30 - 140
13C12-PCB 37	70	30 - 140
13C12-PCB 54	64	30 - 140
13C12-PCB 77	68	30 - 140
13C12-PCB 81	66	30 - 140
13C12-PCB 104	66	30 - 140
13C12-PCB 105	75	30 - 140
13C12-PCB 114	74	30 - 140
13C12-PCB 118	72	30 - 140
13C12-PCB 123	70	30 - 140
13C12-PCB 126	72	30 - 140
13C12-PCB 155	70	30 - 140
13C12-PCB 156	77	30 - 140
13C12-PCB 157	77	30 - 140
13C12-PCB 167	80	30 - 140
13C12-PCB 169	82	30 - 140
13C12-PCB 170	74	30 - 140
13C12-PCB 188	71	30 - 140
13C12-PCB 189	78	30 - 140
13C12-PCB 202	79	30 - 140
13C12-PCB 205	69	30 - 140
13C12-PCB 206	81	30 - 140
13C12-PCB 208	84	30 - 140
13C12-PCB 209	70	30 - 140
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	86	40 - 125
13C12-PCB 111	89	40 - 125
13C12-PCB 178	87	40 - 125

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F110000 - 013B
Dilution Factor: 1
Prep Date....: 06/11/14
Prep Batch #: 4162013
Initial Wgt/Vol : 1000 mL
Analyst ID....: Jon M. Nordquist

Work Order #....: M311J1AA

Matrix....: WATER

Analysis Date....: 06/13/14

Instrument ID....: M1D

Method: EPA-22 1668A

QUALIFIERS

- C Co-eluting isomer.
- J Estimated Result.
- Q Estimated maximum possible concentration (EMPC).

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F100407 Work Order # ...: M311J1AC-LCS Matrix: WATER
 LCS Lot-Sample# : H4F110000 - 013
 Prep Date: 06/11/14 Analysis Date ..: 06/13/14
 Prep Batch # ...: 4162013
 Dilution Factor : 1
 Analyst ID.....: Jon M. Nordquist Instrument ID..: M1D Method.....: EPA-22 1668A
 Initial Wgt/Vol: 1000 mL

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RECOVERY LIMITS
PCB 77 (BZ)	1.00	1.02	ng/L	102	(50 - 150)
PCB 81 (BZ)	1.00	1.02	ng/L	102	(50 - 150)
PCB 105 (BZ)	1.00	1.17	ng/L	117	(50 - 150)
PCB 114 (BZ)	1.00	1.19	ng/L	119	(50 - 150)
PCB 118 (BZ)	1.00	1.20	ng/L	120 B	(50 - 150)
PCB 123 (BZ)	1.00	1.34	ng/L	134	(50 - 150)
PCB 126 (BZ)	1.00	1.25	ng/L	125	(50 - 150)
PCB 156 (BZ)	2.00	2.34	ng/L	117 C	(50 - 150)
PCB 157 (BZ)	2.00	2.34	ng/L	117 C C156	(50 - 150)
PCB 167 (BZ)	1.00	1.17	ng/L	117	(50 - 150)
PCB 169 (BZ)	1.00	1.02	ng/L	102	(50 - 150)
PCB 189 (BZ)	1.00	1.23	ng/L	123	(50 - 150)

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	51	(30 - 140)
13C12-PCB 3	49	(30 - 140)
13C12-PCB 4	65	(30 - 140)
13C12-PCB 15	64	(30 - 140)
13C12-PCB 19	75	(30 - 140)
13C12-PCB 37	75	(30 - 140)
13C12-PCB 54	73	(30 - 140)
13C12-PCB 77	73	(30 - 140)
13C12-PCB 81	71	(30 - 140)
13C12-PCB 104	69	(30 - 140)
13C12-PCB 105	76	(30 - 140)
13C12-PCB 114	75	(30 - 140)
13C12-PCB 118	73	(30 - 140)
13C12-PCB 123	72	(30 - 140)
13C12-PCB 126	75	(30 - 140)
13C12-PCB 155	73	(30 - 140)
13C12-PCB 156	82 C	(30 - 140)
13C12-PCB 157	82 C	(30 - 140)
13C12-PCB 167	81	(30 - 140)
13C12-PCB 169	87	(30 - 140)
13C12-PCB 170	79	(30 - 140)
13C12-PCB 188	75	(30 - 140)
13C12-PCB 189	78	(30 - 140)
13C12-PCB 202	84	(30 - 140)
13C12-PCB 205	70	(30 - 140)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F100407
LCS Lot-Sample# : H4F110000 - 013

Work Order # ...: M311J1AC-LCS

Matrix: WATER

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 206	84	(30 - 140)
13C12-PCB 208	88	(30 - 140)
13C12-PCB 209	73	(30 - 140)
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	82	(40 - 125)
13C12-PCB 111	82	(40 - 125)
13C12-PCB 178	79	(40 - 125)

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

C Co-eluting isomer.

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F120000 - 010B	Work Order #....: M32FP1AA	Matrix....: SOLID
Dilution Factor: 1		
Prep Date....: 06/12/14	Analysis Date....: 06/17/14	Percent Moisture: 0.0
Prep Batch #: 4163010		
Initial Wgt/Vol : 10 g	Instrument ID....: M1D	Method: EPA-22 1668A
Analyst ID....: Patricia(Trish) M. Parsly		

PARAMETER	RESULT	MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	ND	0.010	0.00062	ng/g
PCB 81 (BZ)	ND	0.010	0.00060	ng/g
PCB 126 (BZ)	ND	0.010	0.00086	ng/g
PCB 105 (BZ)	0.0062 J	0.010	0.00075	ng/g
PCB 118 (BZ)	0.011	0.010	0.00075	ng/g
PCB 123 (BZ)	ND	0.010	0.00077	ng/g
PCB 114 (BZ)	ND	0.010	0.00071	ng/g
PCB 169 (BZ)	ND	0.010	0.00061	ng/g
PCB 156 (BZ)	0.0013 Q C J	0.010	0.0010	ng/g
PCB 157 (BZ)	0.0013 Q C156 J	0.010	0.0010	ng/g
PCB 167 (BZ)	ND	0.010	0.00060	ng/g
PCB 189 (BZ)	ND	0.010	0.00046	ng/g

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F120000 - 010B
Dilution Factor: 1
Prep Date....: 06/12/14
Prep Batch #: 4163010
Initial Wgt/Vol : 10 g
Analyst ID....: Patricia(Trish) M. Parsly

Work Order #....: M32FP1AA

Matrix....: SOLID

Analysis Date....: 06/17/14

Percent Moisture: 0.0

Instrument ID....: M1D

Method: EPA-22 1668A

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	61	30 - 140
13C12-PCB 3	55	30 - 140
13C12-PCB 4	70	30 - 140
13C12-PCB 15	62	30 - 140
13C12-PCB 19	87	30 - 140
13C12-PCB 37	76	30 - 140
13C12-PCB 54	83	30 - 140
13C12-PCB 77	74	30 - 140
13C12-PCB 81	73	30 - 140
13C12-PCB 104	83	30 - 140
13C12-PCB 105	84	30 - 140
13C12-PCB 114	85	30 - 140
13C12-PCB 118	82	30 - 140
13C12-PCB 123	82	30 - 140
13C12-PCB 126	80	30 - 140
13C12-PCB 155	91	30 - 140
13C12-PCB 156	93	30 - 140
13C12-PCB 157	93	30 - 140
13C12-PCB 167	90	30 - 140
13C12-PCB 169	94	30 - 140
13C12-PCB 170	87	30 - 140
13C12-PCB 188	88	30 - 140
13C12-PCB 189	83	30 - 140
13C12-PCB 202	96	30 - 140
13C12-PCB 205	77	30 - 140
13C12-PCB 206	95	30 - 140
13C12-PCB 208	89	30 - 140
13C12-PCB 209	85	30 - 140
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	83	40 - 125
13C12-PCB 111	86	40 - 125
13C12-PCB 178	83	40 - 125

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....:	H4F120000 - 010B	Work Order #....:	M32FP1AA	Matrix....:	SOLID
Dilution Factor:	1	Analysis Date....:	06/17/14	Percent Moisture:	0.0
Prep Date....:	06/12/14	Instrument ID....:	M1D	Method:	EPA-22 1668A
Prep Batch #:	4163010				
Initial Wgt/Vol :	10 g				
Analyst ID....:	Patricia(Trish) M. Parsly				

QUALIFIERS

C Co-eluting isomer.
J Estimated Result.
Q Estimated maximum possible concentration (EMPC).

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F100407 Work Order # ...: M32FP1AC-LCS Matrix: SOLID
 LCS Lot-Sample#: H4F120000 - 010
 Prep Date: 06/12/14 Analysis Date ...: 06/16/14
 Prep Batch # ...: 4163010
 Dilution Factor : 1
 Analyst ID.....: Jon M. Nordquist Instrument ID...: MID Method.....: EPA-22 1668A
 Initial Wgt/Vol: 10 g

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RECOVERY LIMITS
PCB 77 (BZ)	0.500	0.484	ng/g	97	(50 - 150)
PCB 81 (BZ)	0.500	0.467	ng/g	93	(50 - 150)
PCB 126 (BZ)	0.500	0.586	ng/g	117	(50 - 150)
PCB 105 (BZ)	0.500	0.537	ng/g	107 B	(50 - 150)
PCB 118 (BZ)	0.500	0.544	ng/g	109 B	(50 - 150)
PCB 123 (BZ)	0.500	0.610	ng/g	122	(50 - 150)
PCB 114 (BZ)	0.500	0.568	ng/g	114	(50 - 150)
PCB 169 (BZ)	0.500	0.488	ng/g	98	(50 - 150)
PCB 156 (BZ)	1.00	1.06	ng/g	106 B C	(50 - 150)
PCB 157 (BZ)	1.00	1.06	ng/g	106 B C156	(50 - 150)
PCB 167 (BZ)	0.500	0.547	ng/g	109	(50 - 150)
PCB 189 (BZ)	0.500	0.561	ng/g	112	(50 - 150)

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	56	(30 - 140)
13C12-PCB 3	53	(30 - 140)
13C12-PCB 4	70	(30 - 140)
13C12-PCB 15	66	(30 - 140)
13C12-PCB 19	86	(30 - 140)
13C12-PCB 37	78	(30 - 140)
13C12-PCB 54	80	(30 - 140)
13C12-PCB 77	76	(30 - 140)
13C12-PCB 81	75	(30 - 140)
13C12-PCB 104	80	(30 - 140)
13C12-PCB 105	85	(30 - 140)
13C12-PCB 114	83	(30 - 140)
13C12-PCB 118	82	(30 - 140)
13C12-PCB 123	81	(30 - 140)
13C12-PCB 126	80	(30 - 140)
13C12-PCB 155	87	(30 - 140)
13C12-PCB 156	90 C	(30 - 140)
13C12-PCB 157	90 C	(30 - 140)
13C12-PCB 167	88	(30 - 140)
13C12-PCB 169	94	(30 - 140)
13C12-PCB 170	85	(30 - 140)
13C12-PCB 188	87	(30 - 140)
13C12-PCB 189	86	(30 - 140)
13C12-PCB 202	93	(30 - 140)
13C12-PCB 205	79	(30 - 140)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F100407
LCS Lot-Sample# : H4F120000 - 010

Work Order # ...: M32FP1AC-LCS

Matrix: SOLID

<u>INTERNAL STANDARD</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 206	97	(30 - 140)
13C12-PCB 208	92	(30 - 140)
13C12-PCB 209	89	(30 - 140)
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	81	(40 - 125)
13C12-PCB 111	84	(40 - 125)
13C12-PCB 178	82	(40 - 125)

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

- B Method blank contamination. The associated method blank contains the target analyte at a reportable level.
C Co-eluting isomer.

Method Blank Report**Trace Level Organic Compounds**

Lot - Sample #....: H4F120000 - 011B **Work Order #....:** M32FQ1AA **Matrix....:** BIOLOGICAL
Dilution Factor: 1
Prep Date....: 06/12/14 **Analysis Date....:** 06/17/14
Prep Batch #: 4163011
Initial Wgt/Vol : 10 g **Instrument ID....:** M1D **Method:** EPA-22 1668A
Analyst ID....: Patricia(Trish) M. Parsly

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	ND		0.010	0.00054	ng/g
PCB 81 (BZ)	ND		0.010	0.00054	ng/g
PCB 126 (BZ)	ND		0.010	0.00080	ng/g
PCB 105 (BZ)	0.017		0.010	0.00070	ng/g
PCB 118 (BZ)	0.037		0.010	0.00068	ng/g
PCB 123 (BZ)	ND		0.010	0.00073	ng/g
PCB 114 (BZ)	ND		0.010	0.00066	ng/g
PCB 169 (BZ)	ND		0.010	0.00056	ng/g
PCB 156 (BZ)	0.0035	Q C J	0.010	0.00099	ng/g
PCB 157 (BZ)	0.0035	Q C156 J	0.010	0.00099	ng/g
PCB 167 (BZ)	ND		0.010	0.00054	ng/g
PCB 189 (BZ)	ND		0.010	0.00043	ng/g

Method Blank Report**Trace Level Organic Compounds****Lot - Sample #....:** H4F120000 - 011B**Work Order #....:** M32FQ1AA**Matrix....:** BIOLOGICAL**Dilution Factor:** 1**Prep Date....:** 06/12/14**Analysis Date....:** 06/17/14**Prep Batch #:** 4163011**Initial Wgt/Vol :** 10 g**Instrument ID....:** M1D**Method:** EPA-22 1668A**Analyst ID....:** Patricia(Trish) M. Parsly

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	62	30 - 140
13C12-PCB 3	57	30 - 140
13C12-PCB 4	71	30 - 140
13C12-PCB 15	63	30 - 140
13C12-PCB 19	88	30 - 140
13C12-PCB 37	76	30 - 140
13C12-PCB 54	84	30 - 140
13C12-PCB 77	73	30 - 140
13C12-PCB 81	73	30 - 140
13C12-PCB 104	83	30 - 140
13C12-PCB 105	84	30 - 140
13C12-PCB 114	84	30 - 140
13C12-PCB 118	82	30 - 140
13C12-PCB 123	80	30 - 140
13C12-PCB 126	79	30 - 140
13C12-PCB 155	91	30 - 140
13C12-PCB 156	91 C	30 - 140
13C12-PCB 157	91 C	30 - 140
13C12-PCB 167	88	30 - 140
13C12-PCB 169	94	30 - 140
13C12-PCB 170	84	30 - 140
13C12-PCB 188	85	30 - 140
13C12-PCB 189	84	30 - 140
13C12-PCB 202	93	30 - 140
13C12-PCB 205	78	30 - 140
13C12-PCB 206	98	30 - 140
13C12-PCB 208	89	30 - 140
13C12-PCB 209	86	30 - 140
 <u>SURROGATE</u>	 <u>PERCENT RECOVERY</u>	 <u>RECOVERY LIMITS</u>
13C12-PCB 28	83	40 - 125
13C12-PCB 111	84	40 - 125
13C12-PCB 178	81	40 - 125

Method Blank Report**Trace Level Organic Compounds**

Lot - Sample #....:	H4F120000 - 011B	Work Order #....:	M32FQ1AA	Matrix....:	BIOLOGICAL
Dilution Factor:	1	Analysis Date....:	06/17/14		
Prep Date....:	06/12/14				
Prep Batch #:	4163011	Instrument ID....:	M1D	Method:	EPA-22 1668A
Initial Wgt/Vol :	10 g				
Analyst ID....:	Patricia(Trish) M. Parsly				

QUALIFIERS

C Co-eluting isomer.
J Estimated Result.
Q Estimated maximum possible concentration (EMPC).

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F100407 Work Order # ...: M32FQ1AC-LCS Matrix: BIOLOGICA
 LCS Lot-Sample#: H4F120000 - 011
 Prep Date: 06/12/14 Analysis Date ..: 06/16/14
 Prep Batch # ...: 4163011
 Dilution Factor : 1
 Analyst ID.....: Jon M. Nordquist Instrument ID..: M1D Method.....: EPA-22 1668A
 Initial Wgt/Vol: 10 g

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RECOVERY LIMITS
PCB 77 (BZ)	0.500	0.485	ng/g	97	(50 - 150)
PCB 81 (BZ)	0.500	0.471	ng/g	94	(50 - 150)
PCB 126 (BZ)	0.500	0.582	ng/g	116	(50 - 150)
PCB 105 (BZ)	0.500	0.545	ng/g	109 B	(50 - 150)
PCB 118 (BZ)	0.500	0.544	ng/g	109 B	(50 - 150)
PCB 123 (BZ)	0.500	0.611	ng/g	122	(50 - 150)
PCB 114 (BZ)	0.500	0.558	ng/g	112	(50 - 150)
PCB 169 (BZ)	0.500	0.486	ng/g	97	(50 - 150)
PCB 156 (BZ)	1.00	1.05	ng/g	105 B C	(50 - 150)
PCB 157 (BZ)	1.00	1.05	ng/g	105 B C156	(50 - 150)
PCB 167 (BZ)	0.500	0.547	ng/g	109	(50 - 150)
PCB 189 (BZ)	0.500	0.565	ng/g	113	(50 - 150)

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	56	(30 - 140)
13C12-PCB 3	52	(30 - 140)
13C12-PCB 4	66	(30 - 140)
13C12-PCB 15	63	(30 - 140)
13C12-PCB 19	86	(30 - 140)
13C12-PCB 37	78	(30 - 140)
13C12-PCB 54	78	(30 - 140)
13C12-PCB 77	76	(30 - 140)
13C12-PCB 81	76	(30 - 140)
13C12-PCB 104	77	(30 - 140)
13C12-PCB 105	82	(30 - 140)
13C12-PCB 114	82	(30 - 140)
13C12-PCB 118	80	(30 - 140)
13C12-PCB 123	79	(30 - 140)
13C12-PCB 126	78	(30 - 140)
13C12-PCB 155	85	(30 - 140)
13C12-PCB 156	90 C	(30 - 140)
13C12-PCB 157	90 C	(30 - 140)
13C12-PCB 167	86	(30 - 140)
13C12-PCB 169	93	(30 - 140)
13C12-PCB 170	85	(30 - 140)
13C12-PCB 188	85	(30 - 140)
13C12-PCB 189	84	(30 - 140)
13C12-PCB 202	91	(30 - 140)
13C12-PCB 205	77	(30 - 140)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F100407
LCS Lot-Sample# : H4F120000 - 011

Work Order # ...: M32FQ1AC-LCS

Matrix: BIOLOGICA

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 206	96	(30 - 140)
13C12-PCB 208	90	(30 - 140)
13C12-PCB 209	85	(30 - 140)
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	80	(40 - 125)
13C12-PCB 111	84	(40 - 125)
13C12-PCB 178	82	(40 - 125)

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

C Co-eluting isomer.

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F230000 - 018B **Work Order #....:** M35M11AA **Matrix....:** BIOLOGICAL
Dilution Factor: 1
Prep Date....: 06/23/14 **Analysis Date....:** 06/25/14
Prep Batch #: 4174018
Initial Wgt/Vol : 10 g **Instrument ID....:** M1D **Method:** EPA-22 1668A
Analyst ID....: Jon M. Nordquist

<u>PARAMETER</u>	<u>RESULT</u>	<u>MINIMUM LEVEL</u>	<u>ESTIMATED DETECTION LIMIT</u>	<u>UNITS</u>
PCB 105 (BZ)	0.00095 Q J	0.010	0.00054	ng/g
PCB 118 (BZ)	0.0015 Q J	0.010	0.00053	ng/g

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	57	30 - 140
13C12-PCB 3	52	30 - 140
13C12-PCB 4	67	30 - 140
13C12-PCB 15	59	30 - 140
13C12-PCB 19	79	30 - 140
13C12-PCB 37	72	30 - 140
13C12-PCB 54	67	30 - 140
13C12-PCB 77	71	30 - 140
13C12-PCB 81	69	30 - 140
13C12-PCB 104	71	30 - 140
13C12-PCB 105	78	30 - 140
13C12-PCB 114	80	30 - 140
13C12-PCB 118	78	30 - 140
13C12-PCB 123	75	30 - 140
13C12-PCB 126	74	30 - 140
13C12-PCB 155	77	30 - 140
13C12-PCB 156	83 C	30 - 140
13C12-PCB 157	83 C	30 - 140
13C12-PCB 167	83	30 - 140
13C12-PCB 169	87	30 - 140
13C12-PCB 170	81	30 - 140
13C12-PCB 188	81	30 - 140
13C12-PCB 189	83	30 - 140
13C12-PCB 202	86	30 - 140
13C12-PCB 205	73	30 - 140
13C12-PCB 206	87	30 - 140
13C12-PCB 208	86	30 - 140
13C12-PCB 209	75	30 - 140

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F230000 - 018B
Dilution Factor: 1
Prep Date....: 06/23/14
Prep Batch #: 4174018
Initial Wgt/Vol : 10 g
Analyst ID....: Jon M. Nordquist

Work Order #....: M35M11AA

Matrix....: BIOLOGICAL

Analysis Date....: 06/25/14

Instrument ID....: M1D

Method: EPA-22 1668A

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	79	40 - 125
13C12-PCB 111	82	40 - 125
13C12-PCB 178	78	40 - 125

QUALIFIERS

- C Co-eluting isomer.
J Estimated Result.
Q Estimated maximum possible concentration (EMPC).

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F100407 Work Order # ...: M35M11AC-LCS Matrix: BIOLOGICA
 LCS Lot-Sample# : H4F230000 - 018
 Prep Date: 06/23/14 Analysis Date ..: 06/25/14
 Prep Batch # ...: 4174018
 Dilution Factor : 1
 Analyst ID.....: Jon M. Nordquist Instrument ID..: M1D Method.....: EPA-22 1668A
 Initial Wgt/Vol: 10 g

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RECOVERY LIMITS
PCB 105 (BZ)	0.500	0.548	ng/g	110 B	(50 - 150)
PCB 118 (BZ)	0.500	0.526	ng/g	105 B	(50 - 150)
INTERNAL STANDARD				PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1				55	(30 - 140)
13C12-PCB 3				49	(30 - 140)
13C12-PCB 4				65	(30 - 140)
13C12-PCB 15				61	(30 - 140)
13C12-PCB 19				78	(30 - 140)
13C12-PCB 37				73	(30 - 140)
13C12-PCB 54				67	(30 - 140)
13C12-PCB 77				75	(30 - 140)
13C12-PCB 81				73	(30 - 140)
13C12-PCB 104				73	(30 - 140)
13C12-PCB 105				78	(30 - 140)
13C12-PCB 114				79	(30 - 140)
13C12-PCB 118				78	(30 - 140)
13C12-PCB 123				76	(30 - 140)
13C12-PCB 126				75	(30 - 140)
13C12-PCB 155				77	(30 - 140)
13C12-PCB 156				79 C	(30 - 140)
13C12-PCB 157				79 C	(30 - 140)
13C12-PCB 167				83	(30 - 140)
13C12-PCB 169				86	(30 - 140)
13C12-PCB 170				82	(30 - 140)
13C12-PCB 188				84	(30 - 140)
13C12-PCB 189				84	(30 - 140)
13C12-PCB 202				89	(30 - 140)
13C12-PCB 205				75	(30 - 140)
13C12-PCB 206				88	(30 - 140)
13C12-PCB 208				85	(30 - 140)
13C12-PCB 209				75	(30 - 140)
SURROGATE				PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28				77	(40 - 125)
13C12-PCB 111				86	(40 - 125)
13C12-PCB 178				83	(40 - 125)

LABORATORY CONTROL SAMPLE DATA REPORT**Trace Level Organic Compounds****Notes:**

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

B Method blank contamination. The associated method blank contains the target analyte at a reportable level.

C Co-eluting isomer.

Sample Receipt Documentation

Analysis Requested

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 144F100407

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken														
1. Do sample container labels match COC? (IDs, Dates, Times)	/			<input type="checkbox"/> 1a Do not match COC <input type="checkbox"/> 1b Incomplete information <input type="checkbox"/> 1c Marking smeared <input type="checkbox"/> 1d Label torn <input type="checkbox"/> 1e No label <input type="checkbox"/> 1f COC not received <input type="checkbox"/> 1g Other:															
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID: <u>SL60</u> Correction factor: <u>0.0</u>	/			<input type="checkbox"/> 2a Temp Blank = _____ <input type="checkbox"/> 2b Cooler Temp = _____ <input type="checkbox"/> 2c Cooling initiated for recently collected samples, ice present.															
3. Were samples received with correct chemical preservative (excluding Encore)?			/	<input type="checkbox"/> 3a See box 3A for pH Preservation <input type="checkbox"/> 3b Other:															
4. Were custody seals present/intact on cooler and/or containers?	/			<input type="checkbox"/> 4a Not present <input type="checkbox"/> 4b Not intact <input type="checkbox"/> 4c Other:															
5. Were all of the samples listed on the COC received?	/			<input type="checkbox"/> 5a Samples received-not on COC <input type="checkbox"/> 5b Samples not received-on COC															
6. Were all of the sample containers received intact?	/			<input type="checkbox"/> 6a Leaking <input type="checkbox"/> 6b Broken															
7. Were VOA samples received without headspace?	/		/	<input type="checkbox"/> 7a Headspace (VOA only)															
8. Were samples received in appropriate containers?	/			<input type="checkbox"/> 8a Improper container															
9. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number: <u>31772016/02</u>	/			<input type="checkbox"/> 9a Could not be determined due to matrix interference															
10. Were samples received within holding time?	/			<input type="checkbox"/> 10a Holding time expired															
11. For rad samples, was sample activity info. provided?			/	<input type="checkbox"/> Incomplete information															
12. For 1613B water samples is pH<9?			/	If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____	pH test strip lot number: _____														
13. Are the shipping containers intact?	/			<input type="checkbox"/> 13a Leaking <input type="checkbox"/> 13b Other:	<table border="1"> <thead> <tr> <th>Box 3A: pH Preservation</th> <th>Box 9A: Residual Chlorine</th> </tr> </thead> <tbody> <tr> <td>Preservative: _____</td> <td></td> </tr> <tr> <td>Lot Number: _____</td> <td></td> </tr> <tr> <td>Exp Date: _____</td> <td></td> </tr> <tr> <td>Analyst: _____</td> <td></td> </tr> <tr> <td>Date: _____</td> <td></td> </tr> <tr> <td>Time: _____</td> <td></td> </tr> </tbody> </table>	Box 3A: pH Preservation	Box 9A: Residual Chlorine	Preservative: _____		Lot Number: _____		Exp Date: _____		Analyst: _____		Date: _____		Time: _____	
Box 3A: pH Preservation	Box 9A: Residual Chlorine																		
Preservative: _____																			
Lot Number: _____																			
Exp Date: _____																			
Analyst: _____																			
Date: _____																			
Time: _____																			
14. Was COC relinquished? (Signed/Dated/Timed)	/			<input type="checkbox"/> 14a Not relinquished															
15. Are tests/parameters listed for each sample?	/			<input type="checkbox"/> 15a Incomplete information															
16. Is the matrix of the samples noted?	/			<input type="checkbox"/> 15a Incomplete information															
17. Is the date/time of sample collection noted?	/			<input type="checkbox"/> 15a Incomplete information															
18. Is the client and project name/# identified?	/			<input type="checkbox"/> 15a Incomplete information															
19. Was the sampler identified on the COC?		/		<input type="checkbox"/> 19a Other															

Quote #: 90633 PM Instructions: NA

Sample Receiving Associate: [Signature] Date: 6-10-14

QA026R28.doc, 042414

Login Sample Receipt Checklist

Client: Conestoga-Rovers & Associates, Inc.

Job Number: 180-33598-1

Login Number: 33598

List Source: TestAmerica Pittsburgh

List Number: 1

Creator: Kovitch, Christina M

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Conestoga-Rovers & Associates, Inc.

Job Number: 180-33598-1

Login Number: 33598

List Number: 2

Creator: Marion, Greg T

List Source: TestAmerica Burlington

List Creation: 06/10/14 02:04 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	CUSTODY SEAL TAPE
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	5.6°C IR GUN ID 181/CF=0
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Pittsburgh

301 Alpha Drive

RIDC Park

Pittsburgh, PA 15238

Tel: (412)963-7058

TestAmerica Job ID: 180-33804-1

Client Project/Site: 0055364, Devils Swamp

For:

Conestoga-Rovers & Associates, Inc.

9033 Meridian Way

West Chester, Ohio 45069

Attn: Deborah Brennan



Authorized for release by:

8/1/2014 3:14:52 PM

Jill Colussy, Project Manager I

(412)963-2444

jill.colussy@testamericainc.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Job ID: 180-33804-1

Laboratory: TestAmerica Pittsburgh

Narrative

CASE NARRATIVE

Client: Conestoga-Rovers & Associates, Inc.

Project: 0055364, Devils Swamp

Report Number: 180-33804-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 6/12/2014 10:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.0° C.

GRAIN SIZE

No difficulties were encountered during the analysis.

GENERAL CHEMISTRY

Please note that the reporting limit for Lloyd Kahn TOC analysis is a nominal value and does not reflect adjustments in sample mass processed on an individual basis.

SUBCONTRACT WORK

Methods PCBCONGENERSSO, TISSUE-PCB CONGENER BY 1668A-WHO: These methods were subcontracted to TestAmerica Knoxville. The subcontract certifications are different from those listed on the TestAmerica cover page of this final report.

Definitions/Glossary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Laboratory: TestAmerica Pittsburgh

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Arkansas DEQ	State Program	6	88-0690	06-27-15
California	NELAP	9	4224CA	03-31-14 *
Connecticut	State Program	1	PH-0688	09-30-14
Florida	NELAP	4	E871008	06-30-15
Illinois	NELAP	5	002602	06-30-15
Kansas	NELAP	7	E-10350	01-31-15
Louisiana	NELAP	6	04041	06-30-15
New Hampshire	NELAP	1	203011	04-04-15
New Jersey	NELAP	2	PA005	06-30-15
New York	NELAP	2	11182	03-31-15
North Carolina (WW/SW)	State Program	4	434	12-31-14
Pennsylvania	NELAP	3	02-00416	04-30-15
South Carolina	State Program	4	89014	04-30-14 *
Texas	NELAP	6	T104704528	03-31-15
US Fish & Wildlife	Federal		LE94312A-1	11-30-14
USDA	Federal		P330-10-00139	05-23-16
Utah	NELAP	8	STLP	05-31-15
Virginia	NELAP	3	460189	09-14-14
West Virginia DEP	State Program	3	142	01-31-15
Wisconsin	State Program	5	998027800	08-31-14

Laboratory: TestAmerica Burlington

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Connecticut	State Program	1	PH-0751	09-30-15
DE Haz. Subst. Cleanup Act (HSCA)	State Program	3	NA	02-13-15
Florida	NELAP	4	E87467	06-30-15
L-A-B	DoD ELAP		L2336	02-26-17
Louisiana	NELAP	6	176292	06-30-14
Maine	State Program	1	VT00008	04-17-15
Minnesota	NELAP	5	050-999-436	12-31-14
New Hampshire	NELAP	1	2006	12-18-14
New Jersey	NELAP	2	VT972	06-30-15
New York	NELAP	2	10391	03-31-15
Pennsylvania	NELAP	3	68-00489	04-30-15
Rhode Island	State Program	1	LAO00298	12-30-14
US Fish & Wildlife	Federal		LE-058448-0	02-28-15
USDA	Federal		P330-11-00093	10-28-16
Vermont	State Program	1	VT-4000	12-31-14
Virginia	NELAP	3	460209	12-14-14

* Certification renewal pending - certification considered valid.

TestAmerica Pittsburgh

Sample Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-33804-1	055364-T2-060914-FT-CRAWFISH-22	Tissue	06/09/14 10:33	06/12/14 10:25
180-33804-2	055364-T2-051914-FT-CRAWFISH-23	Tissue	05/19/14 08:45	06/12/14 10:25
180-33804-3	055364-T2-060414-FT-CRAWFISH-24	Tissue	06/04/14 09:12	06/12/14 10:25
180-33804-4	055364-T2-061114-SE-COMP-3	Sediment	06/11/14 11:15	06/12/14 10:25
180-33804-5	055364-T2-061114-SE-COMP-4	Sediment	06/11/14 11:00	06/12/14 10:25
180-33804-6	055364-T2-061114-SE-COMP-5	Sediment	06/11/14 11:30	06/12/14 10:25

Method Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Method	Method Description	Protocol	Laboratory
2540G	SM 2540G	SM22	TAL PIT
Lipids	Percent Lipids	TestAmerica SOP	TAL PIT
Lloyd Kahn	Organic Carbon, Total (TOC)	EPA	TAL PIT
D422	Grain Size	ASTM	TAL BUR

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

SM22 = SM22

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

Laboratory References:

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Client Sample ID: 055364-T2-060914-FT-CRAWFISH-22

Lab Sample ID: 180-33804-1

Date Collected: 06/09/14 10:33

Matrix: Tissue

Date Received: 06/12/14 10:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			109603	06/25/14 11:52	AJB	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Pre Prep	In House					108522	06/13/14 14:00	LWM	TAL PIT
Total/NA	Pre Prep	Frozen Storage					108521	06/13/14 14:00	LWM	TAL PIT
Total/NA	Analysis	Lipids		1	10.1 g	10.0 mL	109704	06/26/14 06:20	MTW	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	3541			10.1 g	10.0 mL	109663	06/26/14 06:20	KLG	TAL PIT

Client Sample ID: 055364-T2-051914-FT-CRAWFISH-23

Lab Sample ID: 180-33804-2

Date Collected: 05/19/14 08:45

Matrix: Tissue

Date Received: 06/12/14 10:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			109603	06/25/14 11:52	AJB	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Pre Prep	In House					108522	06/13/14 14:00	LWM	TAL PIT
Total/NA	Pre Prep	Frozen Storage					108521	06/13/14 14:00	LWM	TAL PIT
Total/NA	Analysis	Lipids		1	10.0 g	10.0 mL	109704	06/26/14 06:20	MTW	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	3541			10.0 g	10.0 mL	109663	06/26/14 06:20	KLG	TAL PIT

Client Sample ID: 055364-T2-060414-FT-CRAWFISH-24

Lab Sample ID: 180-33804-3

Date Collected: 06/04/14 09:12

Matrix: Tissue

Date Received: 06/12/14 10:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			109603	06/25/14 11:52	AJB	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Pre Prep	In House					108522	06/13/14 14:00	LWM	TAL PIT
Total/NA	Pre Prep	Frozen Storage					108521	06/13/14 14:00	LWM	TAL PIT
Total/NA	Analysis	Lipids		1	10.1 g	10.0 mL	109704	06/26/14 06:20	MTW	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Prep	3541			10.1 g	10.0 mL	109663	06/26/14 06:20	KLG	TAL PIT

Client Sample ID: 055364-T2-061114-SE-COMP-3

Lab Sample ID: 180-33804-4

Date Collected: 06/11/14 11:15

Matrix: Sediment

Date Received: 06/12/14 10:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			108530	06/13/14 15:57	AJB	TAL PIT
		Instrument ID: NOEQUIP								
Total/NA	Analysis	Lloyd Kahn		1			109450	06/24/14 09:55	JDD	TAL PIT
		Instrument ID: FLASHEA								

TestAmerica Pittsburgh

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Client Sample ID: 055364-T2-061114-SE-COMP-3

Lab Sample ID: 180-33804-4

Date Collected: 06/11/14 11:15

Matrix: Sediment

Date Received: 06/12/14 10:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D422		1	67.83 g		73845	06/16/14 21:13	SML	TAL BUR
Instrument ID: D422_import										

Client Sample ID: 055364-T2-061114-SE-COMP-4

Lab Sample ID: 180-33804-5

Date Collected: 06/11/14 11:00

Matrix: Sediment

Date Received: 06/12/14 10:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			108530	06/13/14 15:57	AJB	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Analysis	Lloyd Kahn		1			109450	06/24/14 10:11	JDD	TAL PIT
Instrument ID: FLASHEA										
Total/NA	Analysis	D422		1	77.02 g		73845	06/16/14 22:50	SML	TAL BUR
Instrument ID: D422_import										

Client Sample ID: 055364-T2-061114-SE-COMP-5

Lab Sample ID: 180-33804-6

Date Collected: 06/11/14 11:30

Matrix: Sediment

Date Received: 06/12/14 10:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	2540G		1			108530	06/13/14 15:57	AJB	TAL PIT
Instrument ID: NOEQUIP										
Total/NA	Analysis	Lloyd Kahn		1			109450	06/24/14 10:37	JDD	TAL PIT
Instrument ID: FLASHEA										
Total/NA	Analysis	D422		1	58.03 g		73845	06/16/14 22:53	SML	TAL BUR
Instrument ID: D422_import										

Laboratory References:

TAL BUR = TestAmerica Burlington, 30 Community Drive, Suite 11, South Burlington, VT 05403, TEL (802)660-1990

TAL PIT = TestAmerica Pittsburgh, 301 Alpha Drive, RIDC Park, Pittsburgh, PA 15238, TEL (412)963-7058

Lab Chronicle

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

- Analyst References:**
- Lab: TAL BUR
- Batch Type: Analysis
 - SML = Scott Lavigne
- Lab: TAL PIT
- Batch Type: Pre Prep
 - LWM = Larry Matko
- Batch Type: Prep
- KLK = Kevin Geehring
- Batch Type: Analysis
- AJB = Amanda Brunick
 - JDD = James DeRubeis
 - MTW = Michael Wesoloski

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Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Client Sample ID: 055364-T2-060914-FT-CRAWFISH-22

Lab Sample ID: 180-33804-1

Date Collected: 06/09/14 10:33

Matrix: Tissue

Date Received: 06/12/14 10:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	72		0.10	0.10	%			06/25/14 11:52	1
Percent Lipids	1.6		0.099	0.029	%		06/26/14 06:20	06/26/14 06:20	1

Client Sample ID: 055364-T2-051914-FT-CRAWFISH-23

Lab Sample ID: 180-33804-2

Date Collected: 05/19/14 08:45

Matrix: Tissue

Date Received: 06/12/14 10:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	70		0.10	0.10	%			06/25/14 11:52	1
Percent Lipids	2.1		0.10	0.030	%		06/26/14 06:20	06/26/14 06:20	1

Client Sample ID: 055364-T2-060414-FT-CRAWFISH-24

Lab Sample ID: 180-33804-3

Date Collected: 06/04/14 09:12

Matrix: Tissue

Date Received: 06/12/14 10:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	72		0.10	0.10	%			06/25/14 11:52	1
Percent Lipids	0.91		0.099	0.029	%		06/26/14 06:20	06/26/14 06:20	1

Client Sample ID: 055364-T2-061114-SE-COMP-3

Lab Sample ID: 180-33804-4

Date Collected: 06/11/14 11:15

Matrix: Sediment

Date Received: 06/12/14 10:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	28		0.10	0.10	%			06/13/14 15:57	1
Total Organic Carbon - Duplicates	2400		1400	120	mg/Kg	✱		06/24/14 09:55	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			06/16/14 21:13	1
Sieve Size 3 inch - Percent Finer	100.0				% Passing			06/16/14 21:13	1
Sand	2.2				%			06/16/14 21:13	1
Sieve Size 2 inch - Percent Finer	100.0				% Passing			06/16/14 21:13	1
Coarse Sand	0.0				%			06/16/14 21:13	1
Sieve Size 1.5 inch - Percent Finer	100.0				% Passing			06/16/14 21:13	1
Medium Sand	0.5				%			06/16/14 21:13	1
Sieve Size 1 inch - Percent Finer	100.0				% Passing			06/16/14 21:13	1
Fine Sand	1.7				%			06/16/14 21:13	1
Sieve Size 0.75 inch - Percent Finer	100.0				% Passing			06/16/14 21:13	1
Sieve Size 0.375 inch - Percent Finer	100.0				% Passing			06/16/14 21:13	1
Silt	55.5				%			06/16/14 21:13	1
Clay	42.3				%			06/16/14 21:13	1
Sieve Size #4 - Percent Finer	100.0				% Passing			06/16/14 21:13	1
Sieve Size #10 - Percent Finer	100.0				% Passing			06/16/14 21:13	1
Sieve Size #20 - Percent Finer	99.6				% Passing			06/16/14 21:13	1
Sieve Size #40 - Percent Finer	99.5				% Passing			06/16/14 21:13	1

TestAmerica Pittsburgh

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Client Sample ID: 055364-T2-061114-SE-COMP-3

Lab Sample ID: 180-33804-4

Date Collected: 06/11/14 11:15

Matrix: Sediment

Date Received: 06/12/14 10:25

Method: D422 - Grain Size (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sieve Size #60 - Percent Finer	99.1				% Passing			06/16/14 21:13	1
Sieve Size #80 - Percent Finer	99.1				% Passing			06/16/14 21:13	1
Sieve Size #100 - Percent Finer	99.0				% Passing			06/16/14 21:13	1
Sieve Size #200 - Percent Finer	97.8				% Passing			06/16/14 21:13	1

Client Sample ID: 055364-T2-061114-SE-COMP-4

Lab Sample ID: 180-33804-5

Date Collected: 06/11/14 11:00

Matrix: Sediment

Date Received: 06/12/14 10:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	33		0.10	0.10	%			06/13/14 15:57	1
Total Organic Carbon - Duplicates	14000		1500	130	mg/Kg	✱		06/24/14 10:11	1

Method: D422 - Grain Size

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			06/16/14 22:50	1
Sieve Size 3 inch - Percent Finer	100.0				% Passing			06/16/14 22:50	1
Sand	8.4				%			06/16/14 22:50	1
Sieve Size 2 inch - Percent Finer	100.0				% Passing			06/16/14 22:50	1
Coarse Sand	0.0				%			06/16/14 22:50	1
Sieve Size 1.5 inch - Percent Finer	100.0				% Passing			06/16/14 22:50	1
Medium Sand	0.3				%			06/16/14 22:50	1
Sieve Size 1 inch - Percent Finer	100.0				% Passing			06/16/14 22:50	1
Fine Sand	8.1				%			06/16/14 22:50	1
Sieve Size 0.75 inch - Percent Finer	100.0				% Passing			06/16/14 22:50	1
Sieve Size 0.375 inch - Percent Finer	100.0				% Passing			06/16/14 22:50	1
Silt	49.2				%			06/16/14 22:50	1
Clay	42.4				%			06/16/14 22:50	1
Sieve Size #4 - Percent Finer	100.0				% Passing			06/16/14 22:50	1
Sieve Size #10 - Percent Finer	100.0				% Passing			06/16/14 22:50	1
Sieve Size #20 - Percent Finer	99.9				% Passing			06/16/14 22:50	1
Sieve Size #40 - Percent Finer	99.7				% Passing			06/16/14 22:50	1
Sieve Size #60 - Percent Finer	99.6				% Passing			06/16/14 22:50	1
Sieve Size #80 - Percent Finer	99.4				% Passing			06/16/14 22:50	1
Sieve Size #100 - Percent Finer	99.0				% Passing			06/16/14 22:50	1
Sieve Size #200 - Percent Finer	91.6				% Passing			06/16/14 22:50	1

Client Sample ID: 055364-T2-061114-SE-COMP-5

Lab Sample ID: 180-33804-6

Date Collected: 06/11/14 11:30

Matrix: Sediment

Date Received: 06/12/14 10:25

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	32		0.10	0.10	%			06/13/14 15:57	1
Total Organic Carbon - Duplicates	9100		1500	130	mg/Kg	✱		06/24/14 10:37	1

TestAmerica Pittsburgh

Client Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Client Sample ID: 055364-T2-061114-SE-COMP-5

Lab Sample ID: 180-33804-6

Date Collected: 06/11/14 11:30

Matrix: Sediment

Date Received: 06/12/14 10:25

Method: D422 - Grain Size

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Gravel	0.0				%			06/16/14 22:53	1
Sieve Size 3 inch - Percent Finer	100.0				% Passing			06/16/14 22:53	1
Sand	3.1				%			06/16/14 22:53	1
Sieve Size 2 inch - Percent Finer	100.0				% Passing			06/16/14 22:53	1
Coarse Sand	0.0				%			06/16/14 22:53	1
Sieve Size 1.5 inch - Percent Finer	100.0				% Passing			06/16/14 22:53	1
Medium Sand	1.1				%			06/16/14 22:53	1
Sieve Size 1 inch - Percent Finer	100.0				% Passing			06/16/14 22:53	1
Fine Sand	2.0				%			06/16/14 22:53	1
Sieve Size 0.75 inch - Percent Finer	100.0				% Passing			06/16/14 22:53	1
Sieve Size 0.375 inch - Percent Finer	100.0				% Passing			06/16/14 22:53	1
Silt	51.8				%			06/16/14 22:53	1
Clay	45.1				%			06/16/14 22:53	1
Sieve Size #4 - Percent Finer	100.0				% Passing			06/16/14 22:53	1
Sieve Size #10 - Percent Finer	100.0				% Passing			06/16/14 22:53	1
Sieve Size #20 - Percent Finer	99.5				% Passing			06/16/14 22:53	1
Sieve Size #40 - Percent Finer	98.9				% Passing			06/16/14 22:53	1
Sieve Size #60 - Percent Finer	98.3				% Passing			06/16/14 22:53	1
Sieve Size #80 - Percent Finer	98.0				% Passing			06/16/14 22:53	1
Sieve Size #100 - Percent Finer	97.9				% Passing			06/16/14 22:53	1
Sieve Size #200 - Percent Finer	96.9				% Passing			06/16/14 22:53	1

QC Sample Results

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Method: Lipids - Percent Lipids

Lab Sample ID: MB 180-109663/1-A
Matrix: Tissue
Analysis Batch: 109704

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 109663

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Lipids	ND		0.10	0.030	%		06/26/14 06:20	06/26/14 06:20	1

Lab Sample ID: LCS 180-109663/2-A
Matrix: Tissue
Analysis Batch: 109704

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 109663

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Percent Lipids	10.0	9.84		%		98	30 - 150

Lab Sample ID: LCSD 180-109663/3-A
Matrix: Tissue
Analysis Batch: 109704

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 109663

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Percent Lipids	10.0	9.04		%		90	30 - 150	8	25

Method: Lloyd Kahn - Organic Carbon, Total (TOC)

Lab Sample ID: MB 180-109450/3
Matrix: Sediment
Analysis Batch: 109450

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon - Duplicates	ND		1000	89	mg/Kg			06/24/14 07:02	1

Lab Sample ID: LCS 180-109450/4
Matrix: Sediment
Analysis Batch: 109450

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon - Duplicates	35000	37400		mg/Kg		107	75 - 125

TestAmerica Pittsburgh

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

General Chemistry

Pre Prep Batch: 108521

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33804-1	055364-T2-060914-FT-CRAWFISH-22	Total/NA	Tissue	Frozen Storage	
180-33804-2	055364-T2-051914-FT-CRAWFISH-23	Total/NA	Tissue	Frozen Storage	
180-33804-3	055364-T2-060414-FT-CRAWFISH-24	Total/NA	Tissue	Frozen Storage	

Pre Prep Batch: 108522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33804-1	055364-T2-060914-FT-CRAWFISH-22	Total/NA	Tissue	In House	108521
180-33804-2	055364-T2-051914-FT-CRAWFISH-23	Total/NA	Tissue	In House	108521
180-33804-3	055364-T2-060414-FT-CRAWFISH-24	Total/NA	Tissue	In House	108521

Analysis Batch: 108530

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33804-4	055364-T2-061114-SE-COMP-3	Total/NA	Sediment	2540G	
180-33804-5	055364-T2-061114-SE-COMP-4	Total/NA	Sediment	2540G	
180-33804-6	055364-T2-061114-SE-COMP-5	Total/NA	Sediment	2540G	

Analysis Batch: 109450

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33804-4	055364-T2-061114-SE-COMP-3	Total/NA	Sediment	Lloyd Kahn	
180-33804-5	055364-T2-061114-SE-COMP-4	Total/NA	Sediment	Lloyd Kahn	
180-33804-6	055364-T2-061114-SE-COMP-5	Total/NA	Sediment	Lloyd Kahn	
LCS 180-109450/4	Lab Control Sample	Total/NA	Sediment	Lloyd Kahn	
MB 180-109450/3	Method Blank	Total/NA	Sediment	Lloyd Kahn	

Analysis Batch: 109603

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33804-1	055364-T2-060914-FT-CRAWFISH-22	Total/NA	Tissue	2540G	
180-33804-2	055364-T2-051914-FT-CRAWFISH-23	Total/NA	Tissue	2540G	
180-33804-3	055364-T2-060414-FT-CRAWFISH-24	Total/NA	Tissue	2540G	

Prep Batch: 109663

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33804-1	055364-T2-060914-FT-CRAWFISH-22	Total/NA	Tissue	3541	108522
180-33804-2	055364-T2-051914-FT-CRAWFISH-23	Total/NA	Tissue	3541	108522
180-33804-3	055364-T2-060414-FT-CRAWFISH-24	Total/NA	Tissue	3541	108522
LCS 180-109663/2-A	Lab Control Sample	Total/NA	Tissue	3541	
LCSD 180-109663/3-A	Lab Control Sample Dup	Total/NA	Tissue	3541	
MB 180-109663/1-A	Method Blank	Total/NA	Tissue	3541	

Analysis Batch: 109704

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33804-1	055364-T2-060914-FT-CRAWFISH-22	Total/NA	Tissue	Lipids	109663
180-33804-2	055364-T2-051914-FT-CRAWFISH-23	Total/NA	Tissue	Lipids	109663
180-33804-3	055364-T2-060414-FT-CRAWFISH-24	Total/NA	Tissue	Lipids	109663
LCS 180-109663/2-A	Lab Control Sample	Total/NA	Tissue	Lipids	109663
LCSD 180-109663/3-A	Lab Control Sample Dup	Total/NA	Tissue	Lipids	109663
MB 180-109663/1-A	Method Blank	Total/NA	Tissue	Lipids	109663

TestAmerica Pittsburgh

QC Association Summary

Client: Conestoga-Rovers & Associates, Inc.
Project/Site: 0055364, Devils Swamp

TestAmerica Job ID: 180-33804-1

Geotechnical

Analysis Batch: 73845

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-33804-4	055364-T2-061114-SE-COMP-3	Total/NA	Sediment	D422	
180-33804-5	055364-T2-061114-SE-COMP-4	Total/NA	Sediment	D422	
180-33804-6	055364-T2-061114-SE-COMP-5	Total/NA	Sediment	D422	

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

TestAmerica Laboratories, Inc.

ANALYTICAL REPORT

PROJECT NO. 180-33804-1

Devil's Swamp

Lot #: H4F160406

Jill Colussy

TestAmerica Pittsburgh
301 Alpha Drive
Pittsburgh, PA 15238

TESTAMERICA LABORATORIES, INC.



Bruce Wagner
Project Manager

June 26, 2014

ANALYTICAL METHODS SUMMARY

H4F160406

PARAMETER	ANALYTICAL METHOD
Percent Moisture	MCAWW 160.3 MOD
PCBs, HRGC/HRMS	EPA-22 1668A

References:

EPA-22	"METHOD 1668, REVISION A: CHLORINATED BIPHENYL CONGENERS IN WATER, SOIL, SEDIMENT, AND TISSUE BY HRGC/HRMS" EPA-821-R-00-002 12/99
MCAWW	"Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983 and subsequent revisions.

SAMPLE SUMMARY

H4F160406

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
M33QJ	001	055364-T2-060914-FT-CRAWFISH-22	06/09/14	10:33
M33QK	002	055364-T2-051914-FT-CRAWFISH-23	05/19/14	08:45
M33QL	003	055364-T2-060414-FT-CRAWFISH-24	06/04/14	09:12
M33QM	004	055364-T2-061114-SE-COMP-3	06/11/14	11:15
M33QN	005	055364-T2-061114-SE-COMP-4	06/11/14	11:00
M33QP	006	055364-T2-061114-SE-COMP-5	06/11/14	11:30

NOTE (S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

PROJECT NARRATIVE

H4F160406

The results reported herein are applicable to the samples submitted for analysis only. If you have any questions about this report, please call (865) 291-3000 to speak with the TestAmerica project manager listed on the cover page.

This report shall not be reproduced except in full, without the written approval of the laboratory.

The original chain of custody documentation is included with this report.

Sample Receipt

There were no problems with the condition of the samples received.

Quality Control and Data Interpretation

Unless otherwise noted, all holding times and QC criteria were met and the test results shown in this report meet all applicable NELAC requirements.

For solid and sediments samples, when percent moisture is included in the report header field, the sample results are reported on a dry weight basis. When percent moisture is not contained in the header field, sample results are reported on an as received or wet weight basis.

Samples 055364-T2-060914-FT-CRAWFISH-22, 055364-T2-061114-SE-COMP-3 and 055364-T2-061114-SE-COMP-4 were diluted 5-fold due to either high native analyte levels or retention time shifting.

Nomenclature – The standardization strategy described in this report uses the naming convention of SW-846 Method 8290. This convention differs from Method 1668 in the following manner:

Standard Addition Occurs Prior to:	Method 1668	SW-846 Conventions Used in this Report
Sampling	None	Sampling Surrogate
Extraction	Labeled Toxics/LOC/Window Defining	Internal Standard
Cleanups	Labeled Cleanup Standard	Cleanup Standard*
Injection	Labeled Injection Internal Standard	Recovery Standard

* Cleanup Standard is also referred to as Surrogate Standard on report.

The shorthand notation used for congeners in this report is summarized in Table 2.

Qualifiers – The following flags are used to qualify results for HRMS PCB results:

PROJECT NARRATIVE

H4F160406

J – The reported result is an estimate. The amount reported is below the Estimated Minimum Level (EML). EML is defined by the method as the lowest concentration at which an analyte can be measured reliably with common laboratory interferences present. This value has been determined for each congener by MDL and laboratory method blank studies. The value is adjusted to reflect sample specific initial and final volumes.

E – The reported result is an estimate. The amount reported is above the UCL described below.

The E qualifier is applied on the basis of the **Upper Calibration Level (UCL)**. The quantitative definition of the UCL is listed below:

Upper Calibration Level: The concentration or mass of analyte in the sample that corresponds to the highest calibration level in the initial calibration. It is equivalent to the concentration of the highest calibration standard, assuming that all method-specified sample weights, volumes, and cleanup procedures have been employed.

B – The analyte is present in the associated method blank at a reportable level. For this analysis, there is no method specified reporting level, other than the qualitative criterion that peaks must exhibit a signal-to-noise ratio of 2.5-to-1. Therefore, the presence of any amount of the analyte present in the blank will result a B qualifier on all associated samples.

Note: Some laboratories do not report contamination in the blank unless it is above their lower calibration limit, or an established percentage of the level in the samples, or an established percentage of the regulatory limit. Likewise, some laboratories set a reporting limit at one half the lower calibration limit.

Q – Estimated maximum possible concentration. This qualifier is used when the result is generated from chromatographic data that does not meet all the qualitative criteria for a positive identification given in the method. The criteria include the following areas:

- Ion abundance ratios must be within specified limits (+/-15% of theoretical ion abundance ratio.)
- Retention time criteria (relative to the method-specified isotope labeled retention time standard).
- Co-maximization criterion. The two quantitation ion peaks must reach their maxima within 2 seconds of each other.

S – Ion suppression evident. The trace indicating the signal from the lock mass of the calibration compound shows a deflection at the retention time of the analyte. This may indicate a temporary suppression of the instrument sensitivity, due to a matrix-borne interference.

C – Coeluting Isomer. The isomer is known to coelute with another member of its homologue group, or the peak shape is shouldered, indicating the likelihood of a coeluting isomer. When the C flag is followed by a number, the number indicates the lowest numbered congener among the coelution set. For example, if 100 pg/L is detected at the retention time of PCB 156, and PCB 157 is known to coelute with PCB 156, the results will be flagged as follows:

PCB 156 100 pg/L C

PROJECT NARRATIVE H4F160406

PCB 157 100 pg/L C156

In certain electronic deliverables the result field for PCB 157 will be null, with "C156" appearing in the qualifier field in accordance with the CARP EDD specification.

X – Other. See explanation in narrative.

Results – The results for the analyses are summarized in the following pages. Please see comments regarding qualifiers, above. Additional information regarding qualifiers is explained in the legends at the end of each result summary. A summary of the shorthand conventions used in this report is provided in Table 2.

Detection Limits – For all analyte results a sample specific detection limit is calculated for that analyte. This is done by first determining the GC/MS peak height of the noise or interferent in the expected region of the analyte signal. This value is multiplied by the number 2.5, which serves as a safety factor. The 2.5 safety factor is disregarded if the noise present in the analyte region is a result of chemical interferences. The resulting signal response value is then used to estimate the minimum detectable analyte amount. The result is the estimated sample detection limit.

When an analyte is not detected, an ND appears in place of the result. The value in the detection limit column is the estimated detection limit for the analyte in that particular sample.

EXAMPLE CALCULATIONS

The following formulas were used for sample calculations. Examples are given for calculating the percent recovery for internal standard $^{13}\text{C}_{12}$ -PCB 1, the concentration of native PCB 1 and the EDL for PCB 1. All values used in the calculations below are typical (i.e. not extracted from a particular sample). Actual values are found on the IsoCalc Preliminary Sample Report (IPSR) at the position indicated (in parentheses, below):

INTERNAL STANDARD RECOVERY ($^{13}\text{C}_{12}$ -PCB 1)

$$\text{Percent Recovery} = \frac{\Sigma A_{\text{IS}} \cdot W_{\text{RS}} \cdot 100\%}{\Sigma A_{\text{RS}} \cdot W_{\text{IS}} \cdot \text{RRF}}$$

ΣA_{IS} = Sum of areas for the Internal Standard quantitation ions. (IPSR – Column "Area", Row "13C12-PCB 1")

W_{RS} = Mass in ng of the Recovery Standard. (IPSR – Column "Std Amt", Row "13C12-PCB 9")

ΣA_{RS} = Sum of areas for the Recovery Standard quantitation ions. (IPSR – Column "Area", Row "13C12-PCB 9")

W_{IS} = Mass in ng of the Internal Standard. (IPSR – Column "Std Amt", Row "13C12-PCB 1")

RRF = Internal Standard mean relative response factor from the initial multipoint calibration. (IPSR - Column "RF", Row "13C12-PCB 1".)

PROJECT NARRATIVE H4F160406

$$\text{Substituting typical values, } \frac{1106275 \cdot 2.000 \text{ (ng)} \cdot 100\%}{1205581 \cdot 2.000 \text{ (ng)} \cdot 1.412} = 65\% \text{ Recovery}$$

NATIVE ANALYTE QUANTITATION (PCB 1)

$$\text{Conc} = \frac{\Sigma A_X \cdot W_{IS}}{\Sigma A_{IS} \cdot V \cdot 0.001 \text{ (mL/L)} \cdot \text{RRF}}$$

ΣA_X = Sum of areas for analyte quantitation ions. (IPSR – Area Column “Area”, Row “PCB 1”)

W_{IS} = Mass in ng of Internal Standard. (IPSR – Column “Std Amt”, Row “13C12-PCB 1”)

ΣA_{IS} = Sum areas for the Internal Standard. (IPSR – Column “Area”, Row 13C12-PCB 1)

V = Volume of sample extracted in mL. (IPSR – Header Column 2, Row “Initial Wt/Vol”)

RRF = Native analyte mean relative response factor from the initial calibration, or daily response factor as appropriate. (IPSR – Column “RF”, Row “PCB 1”)

$$\text{Substituting typical values, } \frac{8951 \cdot 2.000 \text{ (ng)}}{1106275 \cdot 2200 \text{ (mL)} \cdot 0.001 \text{ (mL/L)} \cdot 1.136} = 0.00647 \text{ ng/L} = 6.47 \text{ pg/L}$$

CALCULATION OF SAMPLE SPECIFIC ESTIMATED DETECTION LIMIT

This calculation uses the noise values found on the IsoCalc Preliminary Peak Report (IPPR), which follows the IPSR. All the other values used in the equation are found on the IPSR.)

$$\frac{\Sigma I_X \cdot W_{IS} \cdot T_{SN}}{\Sigma I_{IS} \cdot V \cdot 0.001 \text{ (mL/L)} \cdot \text{RRF}}$$

ΣI_X = Sum of the intensities of the noise levels of the characteristic ions in the region of analyte elution. (IPPR – Columns “Height1” and “Height2”, Row {mass} 188, Sub-Row “Noise”).

W_{IS} = Mass in ng of the Internal Standard. (IPSR – Column “Std Amt”, Row “13C12-PCB 1”).

T_{SN} = Minimum Signal-to-Noise threshold. = 2.5. A constant, specified by the method.

ΣI_{IS} = Intensity of the corresponding ^{13}C ions. (IPSR – Column “Height”, Row “13C12-PCB 9”)

V = Volume of sample extracted in mL. (IPSR – Header Column 2, Row “Initial Wt/Vol”)

RRF = Native analyte mean relative response factor from the initial calibration or daily standard as appropriate. (IPSR – Column “RF”, Row “PCB 1”)

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$$\text{Substituting typical values } \frac{79 \bullet 2000 \text{ (pg)} \bullet 2.5}{334600 \bullet 2200 \text{ (mL)} \bullet 0.001 \text{ (mL/L)} \bullet 1.136} = 0.466 \text{ pg/L}$$

In sample data, peaks must have an intensity of 2.5 times the height of the background noise in order to be considered. Careful examination of the two equations above, and a bit of algebra reveals that for the concentration of the smallest peak detectable (per the EDL equation) to exactly equal the smallest peaks that are calculated, requires that the average height to area ratio obtained during the calibration must equal the area to height ratio for every peak obtained near 2.5 times the noise. When the area to height ratio on a peak in a sample is less than the average obtained during calibration, the calculated result will correspond to a peak that would have been less than 2.5 X the noise on the calibration. This is the result of normal variability. Because the source method for the EDL (EPA 1668) does not provide for censoring of results by any other magnitude standard than being 2.5 times the noise, the laboratory does not censor at the calculated EDL. Hence, detections may be reported below the estimated detection limits.

Table 1
Concentration of PCBs in Calibration Solutions

Analyte Type	BZ/IUPAC ¹	CS 0.5 ng/mL	CS 1 ng/mL	CS 2 ng/mL	CS 3 ² ng/mL	CS 4 ng/mL	CS 5 ng/mL
Congeners							
2-MoCB	1	0.5	1.0	5.0	50	400	2000
4-MoCB	3	0.5	1.0	5.0	50	400	2000
2,2'-DiCB	4	0.5	1.0	5.0	50	400	2000
4,4'-DiCB	15	0.5	1.0	5.0	50	400	2000
2,2',6'-TrCB	19	0.5	1.0	5.0	50	400	2000
3,4,4'-TrCB	37	0.5	1.0	5.0	50	400	2000
2,2',6,6'-TeCB	54	0.5	1.0	5.0	50	400	2000
3,3',4,4'-TeCB	77	0.5	1.0	5.0	50	400	2000
3,4,4',5-TeCB	81	0.5	1.0	5.0	50	400	2000
2,2',4,6,6'-PeCB	104	0.5	1.0	5.0	50	400	2000
2,3,3',4,4'-PeCB	105	0.5	1.0	5.0	50	400	2000
2,3,4,4',5-PeCB	114	0.5	1.0	5.0	50	400	2000
2,3',4,4',5-PeCB	118	0.5	1.0	5.0	50	400	2000
2',3,4,4',5-PeCB	123	0.5	1.0	5.0	50	400	2000
3,3',4,4',5-PeCB	126	0.5	1.0	5.0	50	400	2000
2,2',4,4',6,6'-HxCB	155	0.5	1.0	5.0	50	400	2000
2,3,3',4,4',5-HxCB	156	0.5	1.0	5.0	50	400	2000
2,3,3',4,4',5'-HxCB	157	0.5	1.0	5.0	50	400	2000
2,3',4,4',5,5'-HxCB	167	0.5	1.0	5.0	50	400	2000
3,3',4,4',5,5'-HxCB	169	0.5	1.0	5.0	50	400	2000
2,2',3,4',5,6,6'-HpCB	188	0.5	1.0	5.0	50	400	2000
2,3,3',4,4',5,5'-HpCB	189	0.5	1.0	5.0	50	400	2000
2,2',3,3',5,5',6,6'-OoCB	202	0.5	1.0	5.0	50	400	2000
2,3,3',4,4',5,5',6-OoCB	205	0.5	1.0	5.0	50	400	2000
2,2',3,3',4,4',5,5',6-NoCB	206	0.5	1.0	5.0	50	400	2000
2,2',3,3',4',5,5',6,6'-NoCB	208	0.5	1.0	5.0	50	400	2000
DeCB	209	0.5	1.0	5.0	50	400	2000
All other CB congeners		0.5	1.0	5.0	50	400	2000
Labeled Congeners							
¹³ C ₁₂ -2-MoCB	1L	100	100	100	100	100	100
¹³ C ₁₂ -4-MoCB	3L	100	100	100	100	100	100
¹³ C ₁₂ -2,2'-DiCB	4L	100	100	100	100	100	100

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Table 1							
Concentration of PCBs in Calibration Solutions							
Analyte Type	BZ/IUPAC ¹	CS 0.5 ng/mL	CS 1 ng/mL	CS 2 ng/mL	CS 3 ² ng/mL	CS 4 ng/mL	CS 5 ng/mL
¹³ C ₁₂ -4,4'-DiCB	15L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',6'-TriCB	19L	100	100	100	100	100	100
¹³ C ₁₂ -3,4,4'-TriCB	37L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',6,6'-TeCB	54L	100	100	100	100	100	100
¹³ C ₁₂ -3,3',4,4'-TeCB	77L	100	100	100	100	100	100
¹³ C ₁₂ -3,4,4',5'-TeCB	81L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',4,6,6'-PeCB	104L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4'-PeCB	105L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,4,4',5'-PeCB	114L	100	100	100	100	100	100
¹³ C ₁₂ -2,3',4,4',5'-PeCB	118L	100	100	100	100	100	100
¹³ C ₁₂ -2',3,4,4',5'-PeCB	123L	100	100	100	100	100	100
¹³ C ₁₂ -3,3',4,4',5'-PeCB	126L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',4,4',6,6'-HxCB	155L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4',5'-HxCB	156L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4',5'-HxCB	157L	100	100	100	100	100	100
¹³ C ₁₂ -2,3',4,4',5,5'-HxCB	167L	100	100	100	100	100	100
¹³ C ₁₂ -3,3',4,4',5,5'-HxCB	169L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',4,4',5'-HpCB	170L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,4',5,6,6'-HpCB	188L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4',5,5'-HpCB	189L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',5,5',6,6'-OxCB	202L	100	100	100	100	100	100
¹³ C ₁₂ -2,3,3',4,4',5,5',6'-OxCB	205L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',4,4',5,5',6'-NoCB	206L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',4,4',5,5',6,6'-NoCB	208L	100	100	100	100	100	100
¹³ C ₁₂ -DeCB	209L	100	100	100	100	100	100
Cleanup Standards							
¹³ C ₁₂ -2,4,4'-TriCB	28L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -2,3,3',5,5'-PeCB	111L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -2,2',3,3',5,5',6'-HpCB	178L	0.5	1.0	5.0	50	400	--
Recovery Standards							
¹³ C ₁₂ -2,5-DiCB	9L	100	100	100	100	100	100
¹³ C ₁₂ -2,4',5'-TriCB	31L	100	100	100	100	100	100
¹³ C ₁₂ -2,4',6'-TriCB	32L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',5,5'-TeCB	52L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',4,5,5'-PeCB	101L	100	100	100	100	100	100
¹³ C ₁₂ -3,3',4,5,5'-PeCB	127L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3',4,4',5'-HxCB	138L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,4,4',5,5'-HpCB	180L	100	100	100	100	100	100
¹³ C ₁₂ -2,2',3,3',4,4',5,5'-OxCB	194L	100	100	100	100	100	100
Labeled Sampling Surrogates							
¹³ C ₁₂ -2,4'-DiCB	8L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -3,3',4,5'-TeCB	79L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -2,2',3,5',6'-PeCB	95L	0.5	1.0	5.0	50	400	--
¹³ C ₁₂ -2,2',4,4',5,5'-HxCB	153L	0.5	1.0	5.0	50	400	--

1. Suffix "L" indicates labeled compound.

2. Calibration verification solution.

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Table 2					
PCB Shorthand Nomenclature ⁴ Used in this Report					
BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry Number ³	BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry Number ³
1	2-monochlorobiphenyl	2051-60-7	106	2,3,3',4,5-pentachlorobiphenyl	70424-69-0
2	3-monochlorobiphenyl	2051-61-8	107/109	2,3,3',4',5-pentachlorobiphenyl	70424-68-9
3	4-monochlorobiphenyl	2051-62-9	108/107	2,3,3',4,5'-pentachlorobiphenyl	70362-41-3
4	2,2'-dichlorobiphenyl	13029-08-8	109/108	2,3,3',4,6-pentachlorobiphenyl	74472-35-8
5	2,3-dichlorobiphenyl	16605-91-7	110	2,3,3',4',6-pentachlorobiphenyl	38380-03-9
6	2,3'-dichlorobiphenyl	25569-80-6	111	2,3,3',5,5'-pentachlorobiphenyl	39635-32-0
7	2,4-dichlorobiphenyl	33284-50-3	112	2,3,3',5,6-pentachlorobiphenyl	74472-36-9
8	2,4'-dichlorobiphenyl	34883-43-7	113	2,3,3',5',6-pentachlorobiphenyl	68194-10-5
9	2,5-dichlorobiphenyl	34883-39-1	114	2,3,4,4',5-pentachlorobiphenyl	74472-37-0
10	2,6-dichlorobiphenyl	33146-45-1	115	2,3,4,4',6-pentachlorobiphenyl	74472-38-1
11	3,3'-dichlorobiphenyl	2050-67-1	116	2,3,4,5,6-pentachlorobiphenyl	18259-05-7
12	3,4-dichlorobiphenyl	2974-92-7	117	2,3,4',5,6-pentachlorobiphenyl	68194-11-6
13	3,4'-dichlorobiphenyl	2974-90-5	118	2,3',4,4',5-pentachlorobiphenyl	31508-00-6
14	3,5-dichlorobiphenyl	34883-41-5	119	2,3',4,4',6-pentachlorobiphenyl	56558-17-9
15	4,4'-dichlorobiphenyl	2050-68-2	120	2,3',4,5,5'-pentachlorobiphenyl	68194-12-7
16	2,2',3-trichlorobiphenyl	38444-78-9	121	2,3',4,5',6-pentachlorobiphenyl	56558-18-0
17	2,2',4-trichlorobiphenyl	37680-66-3	122	2',3,3',4,5-pentachlorobiphenyl (2,3,3',4',5'-pentachlorobiphenyl)	76842-07-4
18	2,2',5-trichlorobiphenyl	37680-65-2	123	2',3,4,4',5-pentachlorobiphenyl (2,3',4,4',5'-pentachlorobiphenyl)	65510-44-3
19	2,2',6-trichlorobiphenyl	38444-73-4	124	2',3,4,5,5'-pentachlorobiphenyl (2,3',4',5',5'-pentachlorobiphenyl)	70424-70-3
20	*2,3,3'-trichlorobiphenyl	38444-84-7	125	2',3,4,5,6'-pentachlorobiphenyl (2,3',4',5',6-pentachlorobiphenyl)	74472-39-2
21	2,3,4-trichlorobiphenyl	55702-46-0	126	3,3',4,4',5-pentachlorobiphenyl	57465-28-8
22	2,3,4'-trichlorobiphenyl	38444-85-8	127	3,3',4,5,5'-pentachlorobiphenyl	39635-33-1
23	2,3,5-trichlorobiphenyl	55720-44-0	128	2,2',3,3',4,4'-hexachlorobiphenyl	38380-07-3
24	2,3,6-trichlorobiphenyl	55702-45-9	129	2,2',3,3',4,5-hexachlorobiphenyl	55215-18-4
25	2,3',4-trichlorobiphenyl	55712-37-3	130	2,2',3,3',4,5'-hexachlorobiphenyl	52663-66-8
26	2,3',5-trichlorobiphenyl	38444-81-4	131	2,2',3,3',4,6-hexachlorobiphenyl	61798-70-7
27	2,3',6-trichlorobiphenyl	38444-76-7	132	2,2',3,3',4,6'-hexachlorobiphenyl	38380-05-1
28	2,4,4'-trichlorobiphenyl	7012-37-5	133	2,2',3,3',5,5'-hexachlorobiphenyl	35694-04-3
29	2,4,5-trichlorobiphenyl	15862-07-4	134	2,2',3,3',5,6-hexachlorobiphenyl	52704-70-8
30	2,4,6-trichlorobiphenyl	35693-92-6	135	2,2',3,3',5,6'-hexachlorobiphenyl	52744-13-5
31	2,4',5-trichlorobiphenyl	16606-02-3	136	2,2',3,3',6,6'-hexachlorobiphenyl	38411-22-2
32	2,4',6-trichlorobiphenyl	38444-77-8	137	2,2',3,4,4',5-hexachlorobiphenyl	35694-06-5
33	2',3,4-trichlorobiphenyl (2,3',4'-trichlorobiphenyl)	38444-86-9	138	2,2',3,4,4',5'-hexachlorobiphenyl	35065-28-2
34	2',3,5-trichlorobiphenyl (2,3',5'-trichlorobiphenyl)	37680-68-5	139	2,2',3,4,4',6-hexachlorobiphenyl	56030-56-9
35	3,3',4-trichlorobiphenyl	37680-69-6	140	2,2',3,4,4',6'-hexachlorobiphenyl	59291-64-4
36	3,3',5-trichlorobiphenyl	38444-87-0	141	2,2',3,4,5,5'-hexachlorobiphenyl	52712-04-6
37	3,4,4'-trichlorobiphenyl	38444-90-5	142	2,2',3,4,5,6-hexachlorobiphenyl	41411-61-4
38	3,4,5-trichlorobiphenyl	53555-66-1	143	2,2',3,4,5,6'-hexachlorobiphenyl	68194-15-0
39	3,4',5-trichlorobiphenyl	38444-88-1	144	2,2',3,4,5',6-hexachlorobiphenyl	68194-14-9
40	2,2',3,3'-tetrachlorobiphenyl	38444-93-8	145	2,2',3,4,6,6'-hexachlorobiphenyl	74472-40-5
41	2,2',3,4-tetrachlorobiphenyl	52663-59-9	146	2,2',3,4',5,5'-hexachlorobiphenyl	51908-16-8
42	2,2',3,4'-tetrachlorobiphenyl	36559-22-5	147	2,2',3,4',5,6-hexachlorobiphenyl	68194-13-8
43	2,2',3,5-tetrachlorobiphenyl	70362-46-8	148	2,2',3,4',5,6'-hexachlorobiphenyl	74472-41-6
44	2,2',3,5'-tetrachlorobiphenyl	41464-39-5	149	2,2',3,4',5',6-hexachlorobiphenyl	38380-04-0
45	2,2',3,6-tetrachlorobiphenyl	70362-45-7	150	2,2',3,4',6,6'-hexachlorobiphenyl	68194-08-1

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BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry Number ³	BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry Number ³
46	2,2',3,6'-tetrachlorobiphenyl	41464-47-5	151	2,2',3,5,5',6-hexachlorobiphenyl	52663-63-5
47	2,2',4,4'-tetrachlorobiphenyl	2437-79-8	152	2,2',3,5,6,6'-hexachlorobiphenyl	68194-09-2
48	2,2',4,5-tetrachlorobiphenyl	70362-47-9	153	2,2',4,4',5,5'-hexachlorobiphenyl	35065-27-1
49	2,2',4,5'-tetrachlorobiphenyl	41464-40-8	154	2,2',4,4',5,6'-hexachlorobiphenyl	60145-22-4
50	2,2',4,6-tetrachlorobiphenyl	62796-65-0	155	2,2',4,4',6,6'-hexachlorobiphenyl	33979-03-2
51	2,2',4,6'-tetrachlorobiphenyl	68194-04-7	156	2,3,3',4,4',5-hexachlorobiphenyl	38380-08-4
52	2,2',5,5'-tetrachlorobiphenyl	35693-99-3	157	2,3,3',4,4',5'-hexachlorobiphenyl	69782-90-7
53	2,2',5,6'-tetrachlorobiphenyl	41464-41-9	158	2,3,3',4,4',6-hexachlorobiphenyl	74472-42-7
54	2,2',6,6'-tetrachlorobiphenyl	15968-05-5	159	2,3,3',4,5,5'-hexachlorobiphenyl	39635-35-3
55	2,3,3',4-tetrachlorobiphenyl	74338-24-2	160	2,3,3',4,5,6-hexachlorobiphenyl	41411-62-5
56	2,3,3',4'-tetrachlorobiphenyl	41464-43-1	161	2,3,3',4,5',6-hexachlorobiphenyl	74472-43-8
57	2,3,3',5-tetrachlorobiphenyl	70424-67-8	162	2,3,3',4',5,5'-hexachlorobiphenyl	39635-34-2
58	2,3,3',5'-tetrachlorobiphenyl	41464-49-7	163	2,3,3',4',5,6-hexachlorobiphenyl	74472-44-9
59	2,3,3',6-tetrachlorobiphenyl	74472-33-6	164	2,3,3',4',5',6-hexachlorobiphenyl	74472-45-0
60	2,3,4,4'-tetrachlorobiphenyl	33025-41-1	165	2,3,3',5,5',6-hexachlorobiphenyl	74472-46-1
61	2,3,4,5-tetrachlorobiphenyl	33284-53-6	166	2,3,4,4',5,6-hexachlorobiphenyl	41411-63-6
62	2,3,4,6-tetrachlorobiphenyl	54230-22-7	167	2,3',4,4',5,5'-hexachlorobiphenyl	52663-72-6
63	2,3,4',5-tetrachlorobiphenyl	74472-34-7	168	2,3',4,4',5',6-hexachlorobiphenyl	59291-65-5
64	2,3,4',6-tetrachlorobiphenyl	52663-58-8	169	3,3',4,4',5,5'-hexachlorobiphenyl	32774-16-6
65	2,3,5,6-tetrachlorobiphenyl	33284-54-7	170	2,2',3,3',4,4',5-heptachlorobiphenyl	35065-30-6
66	2,3',4,4'-tetrachlorobiphenyl	32598-10-0	171	2,2',3,3',4,4',6-heptachlorobiphenyl	52663-71-5
67	2,3',4,5-tetrachlorobiphenyl	73575-53-8	172	2,2',3,3',4,5,5'-heptachlorobiphenyl	52663-74-8
68	2,3',4,5'-tetrachlorobiphenyl	73575-52-7	173	2,2',3,3',4,5,6-heptachlorobiphenyl	68194-16-1
69	2,3',4,6-tetrachlorobiphenyl	60233-24-1	174	2,2',3,3',4,5,6'-heptachlorobiphenyl	38411-25-5
70	2,3',4',5-tetrachlorobiphenyl	32598-11-1	175	2,2',3,3',4,5',6-heptachlorobiphenyl	40186-70-7
71	2,3',4',6-tetrachlorobiphenyl	41464-46-4	176	2,2',3,3',4,6,6'-heptachlorobiphenyl	52663-65-7
72	2,3',5,5'-tetrachlorobiphenyl	41464-42-0	177	2,2',3,3',4',5,6-heptachlorobiphenyl (2,2',3,3',4,5',6'-heptachlorobiphenyl)	52663-70-4
73	2,3',5',6-tetrachlorobiphenyl	74338-23-1	178	2,2',3,3',5,5',6-heptachlorobiphenyl	52663-67-9
74	2,4,4',5-tetrachlorobiphenyl	32690-93-0	179	2,2',3,3',5,6,6'-heptachlorobiphenyl	52663-64-6
75	2,4,4',6-tetrachlorobiphenyl	32598-12-2	180	2,2',3,4,4',5,5'-heptachlorobiphenyl	35065-29-3
76	2',3,4,5-tetrachlorobiphenyl (2,3',4',5'-tetrachlorobiphenyl)	70362-48-0	181	2,2',3,4,4',5,6-heptachlorobiphenyl	74472-47-2
77	3,3',4,4'-tetrachlorobiphenyl	32598-13-3	182	2,2',3,4,4',5,6'-heptachlorobiphenyl	60145-23-5
78	3,3',4,5-tetrachlorobiphenyl	70362-49-1	183	2,2',3,4,4',5',6-heptachlorobiphenyl	52663-69-1
79	3,3',4,5'-tetrachlorobiphenyl	41464-48-6	184	2,2',3,4,4',6,6'-heptachlorobiphenyl	74472-48-3
80	3,3',5,5'-tetrachlorobiphenyl	33284-52-5	185	2,2',3,4,5,5',6-heptachlorobiphenyl	52712-05-7
81	3,4,4',5-tetrachlorobiphenyl	70362-50-4	186	2,2',3,4,5,6,6'-heptachlorobiphenyl	74472-49-4
82	2,2',3,3',4-pentachlorobiphenyl	52663-62-4	187	2,2',3,4',5,5',6-heptachlorobiphenyl	52663-68-0
83	2,2',3,3',5-pentachlorobiphenyl	60145-20-2	188	2,2',3,4',5,6,6'-heptachlorobiphenyl	74487-85-7
84	2,2',3,3',6-pentachlorobiphenyl	52663-60-2	189	2,3,3',4,4',5,5'-heptachlorobiphenyl	39635-31-9
85	2,2',3,4,4'-pentachlorobiphenyl	65510-45-4	190	2,3,3',4,4',5,6-heptachlorobiphenyl	41411-64-7
86	2,2',3,4,5-pentachlorobiphenyl	55312-69-1	191	2,3,3',4,4',5',6-heptachlorobiphenyl	74472-50-7
87	2,2',3,4,5'-pentachlorobiphenyl	38380-02-8	192	2,3,3',4,5,5',6-heptachlorobiphenyl	74472-51-8
88	2,2',3,4,6-pentachlorobiphenyl	55215-17-3	193	2,3,3',4',5,5',6-heptachlorobiphenyl	69782-91-8
89	2,2',3,4,6'-pentachlorobiphenyl	73575-57-2	194	2,2',3,3',4,4',5,5'-octachlorobiphenyl	35694-08-7
90	2,2',3,4',5-pentachlorobiphenyl	68194-07-0	195	2,2',3,3',4,4',5,6-octachlorobiphenyl	52663-78-2
91	2,2',3,4',6-pentachlorobiphenyl	68194-05-8	196	2,2',3,3',4,4',5,6'-octachlorobiphenyl	42740-50-1
92	2,2',3,5,5'-pentachlorobiphenyl	52663-61-3	197	2,2',3,3',4,4',6,6'-octachlorobiphenyl	33091-17-7

PROJECT NARRATIVE

H4F160406

Table 2					
PCB Shorthand Nomenclature ⁴ Used in this Report					
BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry ³ Number	BZ/IUPAC Number ¹ .	PCB Chemical Structure Name ²	CAS Registry ³ Number
93	2,2',3,5,6-pentachlorobiphenyl	73575-56-1	198	2,2',3,3',4,5,5',6-octachlorobiphenyl	68194-17-2
94	2,2',3,5,6'-pentachlorobiphenyl	73575-55-0	199/200	2,2',3,3',4,5,6,6'-octachlorobiphenyl	52663-73-7
95	2,2',3,5',6-pentachlorobiphenyl	38379-99-6	200/201	2,2',3,3',4,5',6,6'-octachlorobiphenyl	40186-71-8
96	2,2',3,6,6'-pentachlorobiphenyl	73575-54-9	201/199	2,2',3,3',4,5,5',6'-octachlorobiphenyl	52663-75-9
97	2,2',3',4,5-pentachlorobiphenyl (2,2',3,4',5'-pentachlorobiphenyl)	41464-51-1	202	2,2',3,3',5,5',6,6'-octachlorobiphenyl	2136-99-4
98	2,2',3',4,6-pentachlorobiphenyl (2,2',3,4',6'-pentachlorobiphenyl)	60233-25-2	203	2,2',3,4,4',5,5',6-octachlorobiphenyl	52663-76-0
99	2,2',4,4',5-pentachlorobiphenyl	38380-01-7	204	2,2',3,4,4',5,6,6'-octachlorobiphenyl	74472-52-9
100	2,2',4,4',6-pentachlorobiphenyl	39485-83-1	205	2,3,3',4,4',5,5',6-octachlorobiphenyl	74472-53-0
101	2,2',4,5,5'-pentachlorobiphenyl	37680-73-2	206	2,2',3,3',4,4',5,5',6-nonachlorobiphenyl	40186-72-9
102	2,2',4,5,6-pentachlorobiphenyl	68194-06-9	207	2,2',3,3',4,4',5,6,6'-nonachlorobiphenyl	52663-79-3
103	2,2',4,5',6-pentachlorobiphenyl	60145-21-3	208	2,2',3,3',4,5,5',6,6'-nonachlorobiphenyl	52663-77-1
104	2,2',4,6,6'-pentachlorobiphenyl	56558-16-8	209	2,2',3,3',4,4',5,5',6,6'-decachlorobiphenyl	2051-24-3
105	2,3,3',4,4'-pentachlorobiphenyl	32598-14-4			

1. The BZ number is from Ballschmiter and Zell (1980). The IUPAC number, when different from the BZ, follows the recommended changes to the BZ number per Schulte and Malisch (1983) and Guitart et al. (1993).
2. The chemical structure names are from Ballschmiter and Zell (1980). IUPAC nomenclature structure names are listed in parenthesis when different from the BZ name (source CAS Registry).
3. Chemical Abstract Service Registry number (source CAS Registry and 1668 Table 1).
4. A complete discussion of PCB Nomenclature may be found in Mills III, S.A. et al., A summary of the 209 PCB congener nomenclature, Chemosphere (2007), doi:10.1016/j.chemosphere.2007.03.052.

CERTIFICATION SUMMARY

Laboratory	Authority	Program	EPA Region	Certification ID
TestAmerica Knoxville	L-A-B	DoD ELAP		L2311
TestAmerica Knoxville	Arkansas DEQ	State Program	6	88-0688
TestAmerica Knoxville	California	State Program	9	2423
TestAmerica Knoxville	Colorado	State Program	8	N/A
TestAmerica Knoxville	Connecticut	State Program	1	PH-0223
TestAmerica Knoxville	Florida	NELAC	4	E87177
TestAmerica Knoxville	Georgia	State Program	4	906
TestAmerica Knoxville	Hawaii	State Program	9	N/A
TestAmerica Knoxville	Indiana	State Program	5	C-TN-02
TestAmerica Knoxville	Iowa	State Program	7	375
TestAmerica Knoxville	Kansas	NELAC	7	E-10349
TestAmerica Knoxville	Kentucky	State Program	4	90101
TestAmerica Knoxville	Louisiana DOHH	State Program	6	LA110001
TestAmerica Knoxville	Louisiana DEQ	NELAC	6	83979
TestAmerica Knoxville	Maryland	State Program	3	277
TestAmerica Knoxville	Michigan	State Program	5	9933
TestAmerica Knoxville	Minnesota	NELAC	5	047-999-429
TestAmerica Knoxville	Nevada	State Program	9	TN00009
TestAmerica Knoxville	New Jersey	NELAC	2	TN001
TestAmerica Knoxville	New York	NELAC	2	10781
TestAmerica Knoxville	North Carolina DENR	State Program	4	64
TestAmerica Knoxville	North Carolina DHHS	State Program	4	21705
TestAmerica Knoxville	Ohio	OVAP	5	CL0059
TestAmerica Knoxville	Oklahoma	State Program	6	9415
TestAmerica Knoxville	Pennsylvania	NELAC	3	68-00576
TestAmerica Knoxville	South Carolina	State Program	4	84001
TestAmerica Knoxville	Tennessee	State Program	4	2014
TestAmerica Knoxville	Texas	NELAC	6	T104704380-TX
TestAmerica Knoxville	Federal	USDA		P330-11-00035
TestAmerica Knoxville	Utah	NELAC	8	QUAN3
TestAmerica Knoxville	Virginia	NELAC	3	460176
TestAmerica Knoxville	Virginia	State Program	3	165
TestAmerica Knoxville	Washington	State Program	10	C593
TestAmerica Knoxville	West Virginia DEP	State Program	3	345
TestAmerica Knoxville	West Virginia DHHR	State Program	3	9955C

Accreditation may not be offered or required for all methods and analytes reported in this package. Please contact your project manager for the laboratory's current list of certified methods and analytes.

Sample Data Summary

TestAmerica Pittsburgh
Sample ID: 055364-T2-060914-FT-CRAWFISH-22
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 001	Work Order #....:	M33QJ1AA	Matrix....:	TA
Date Sampled....:	06/09/14	Date Received....:	06/14/14	Dilution Factor:	5
Prep Date....:	06/18/14	Analysis Date....:	06/25/14		
Prep Batch #:	4169044				
Initial Wgt/Vol :	10 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Linda K. McWhirter				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	0.64		0.050	0.010	ng/g
PCB 81 (BZ)	0.031	Q J	0.050	0.0095	ng/g
PCB 126 (BZ)	0.25	Q	0.050	0.013	ng/g
PCB 105 (BZ)	8.1		0.050	0.011	ng/g
PCB 118 (BZ)	33		0.050	0.010	ng/g
PCB 123 (BZ)	0.80		0.050	0.011	ng/g
PCB 114 (BZ)	0.43		0.050	0.0098	ng/g
PCB 169 (BZ)	0.026	Q J	0.050	0.011	ng/g
PCB 156 (BZ)	3.7	C	0.050	0.018	ng/g
PCB 157 (BZ)	3.7	C156	0.050	0.018	ng/g
PCB 167 (BZ)	1.5		0.050	0.010	ng/g
PCB 189 (BZ)	0.19		0.050	0.0079	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-060914-FT-CRAWFISH-22
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 001	Work Order #....:	M33QJ1AA	Matrix....:	TA
Date Sampled....:	06/09/14	Date Received....:	06/14/14	Dilution Factor:	5
Prep Date....:	06/18/14	Analysis Date....:	06/25/14		
Prep Batch #:	4169044				
Initial Wgt/Vol :	10 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Linda K. McWhirter				

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	52	30 - 140
13C12-PCB 3	43	30 - 140
13C12-PCB 4	74	30 - 140
13C12-PCB 15	66	30 - 140
13C12-PCB 19	88	30 - 140
13C12-PCB 37	78	30 - 140
13C12-PCB 54	66	30 - 140
13C12-PCB 77	79	30 - 140
13C12-PCB 81	74	30 - 140
13C12-PCB 104	84	30 - 140
13C12-PCB 105	82	30 - 140
13C12-PCB 114	83	30 - 140
13C12-PCB 118	85	30 - 140
13C12-PCB 123	80	30 - 140
13C12-PCB 126	76	30 - 140
13C12-PCB 155	86	30 - 140
13C12-PCB 156	84	30 - 140
13C12-PCB 157	84	30 - 140
13C12-PCB 167	85	30 - 140
13C12-PCB 169	88	30 - 140
13C12-PCB 170	86	30 - 140
13C12-PCB 188	90	30 - 140
13C12-PCB 189	87	30 - 140
13C12-PCB 202	91	30 - 140
13C12-PCB 205	75	30 - 140
13C12-PCB 206	91	30 - 140
13C12-PCB 208	91	30 - 140
13C12-PCB 209	83	30 - 140

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	85	40 - 125
13C12-PCB 111	87	40 - 125
13C12-PCB 178	85	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-060914-FT-CRAWFISH-22
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 001	Work Order #....:	M33QJ1AA	Matrix....:	TA
Date Sampled....:	06/09/14	Date Received....:	06/14/14	Dilution Factor:	5
Prep Date....:	06/18/14	Analysis Date....:	06/25/14		
Prep Batch #:	4169044				
Initial Wgt/Vol :	10 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Linda K. McWhirter				

QUALIFIERS

C Co-eluting isomer.
J Estimated Result.
Q Estimated maximum possible concentration (EMPC).

TestAmerica Pittsburgh
Sample ID: 055364-T2-051914-FT-CRAWFISH-23
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 002	Work Order #....:	M33QK1AA	Matrix....:	TA
Date Sampled....:	05/19/14	Date Received....:	06/14/14	Dilution Factor:	1
Prep Date....:	06/18/14	Analysis Date....:	06/24/14		
Prep Batch #:	4169044				
Initial Wgt/Vol :	10.1 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	0.14		0.0099	0.0014	ng/g
PCB 81 (BZ)	0.0027	Q J	0.0099	0.0014	ng/g
PCB 126 (BZ)	0.014	Q	0.0099	0.0019	ng/g
PCB 105 (BZ)	1.9		0.0099	0.0016	ng/g
PCB 118 (BZ)	7.4		0.0099	0.0016	ng/g
PCB 123 (BZ)	0.19		0.0099	0.0017	ng/g
PCB 114 (BZ)	0.091		0.0099	0.0016	ng/g
PCB 169 (BZ)	0.0047	J	0.0099	0.0019	ng/g
PCB 156 (BZ)	0.88	C	0.0099	0.0032	ng/g
PCB 157 (BZ)	0.88	C156	0.0099	0.0032	ng/g
PCB 167 (BZ)	0.38		0.0099	0.0017	ng/g
PCB 189 (BZ)	0.036		0.0099	0.0018	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-051914-FT-CRAWFISH-23
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 002	Work Order #....:	M33QK1AA	Matrix....:	TA
Date Sampled....:	05/19/14	Date Received....:	06/14/14	Dilution Factor:	1
Prep Date....:	06/18/14	Analysis Date....:	06/24/14		
Prep Batch #:	4169044				
Initial Wgt/Vol :	10.1 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	54	30 - 140
13C12-PCB 3	46	30 - 140
13C12-PCB 4	74	30 - 140
13C12-PCB 15	75	30 - 140
13C12-PCB 19	86	30 - 140
13C12-PCB 37	83	30 - 140
13C12-PCB 54	76	30 - 140
13C12-PCB 77	75	30 - 140
13C12-PCB 81	73	30 - 140
13C12-PCB 104	79	30 - 140
13C12-PCB 105	79	30 - 140
13C12-PCB 114	80	30 - 140
13C12-PCB 118	78	30 - 140
13C12-PCB 123	77	30 - 140
13C12-PCB 126	75	30 - 140
13C12-PCB 155	81	30 - 140
13C12-PCB 156	83	30 - 140
13C12-PCB 157	83	30 - 140
13C12-PCB 167	85	30 - 140
13C12-PCB 169	79	30 - 140
13C12-PCB 170	73	30 - 140
13C12-PCB 188	90	30 - 140
13C12-PCB 189	137	30 - 140
13C12-PCB 202	88	30 - 140
13C12-PCB 205	74	30 - 140
13C12-PCB 206	95	30 - 140
13C12-PCB 208	118	30 - 140
13C12-PCB 209	99	30 - 140

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	85	40 - 125
13C12-PCB 111	84	40 - 125
13C12-PCB 178	85	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-051914-FT-CRAWFISH-23
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 002	Work Order #....:	M33QK1AA	Matrix....:	TA
Date Sampled....:	05/19/14	Date Received....:	06/14/14	Dilution Factor:	1
Prep Date....:	06/18/14	Analysis Date....:	06/24/14		
Prep Batch #:	4169044				
Initial Wgt/Vol :	10.1 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

QUALIFIERS

C Co-eluting isomer.
J Estimated Result.
Q Estimated maximum possible concentration (EMPC).

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-FT-CRAWFISH-24
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 003	Work Order #....:	M33QL1AA	Matrix....:	TA
Date Sampled....:	06/04/14	Date Received....:	06/14/14	Dilution Factor:	1
Prep Date....:	06/18/14	Analysis Date....:	06/24/14		
Prep Batch #:	4169044				
Initial Wgt/Vol :	10 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	0.018		0.010	0.0010	ng/g
PCB 81 (BZ)	ND		0.010	0.00099	ng/g
PCB 126 (BZ)	0.0027	Q J	0.010	0.0014	ng/g
PCB 105 (BZ)	0.25		0.010	0.0012	ng/g
PCB 118 (BZ)	1.0		0.010	0.0012	ng/g
PCB 123 (BZ)	0.020		0.010	0.0013	ng/g
PCB 114 (BZ)	0.017		0.010	0.0011	ng/g
PCB 169 (BZ)	ND		0.010	0.0013	ng/g
PCB 156 (BZ)	0.11	C	0.010	0.0023	ng/g
PCB 157 (BZ)	0.11	C156	0.010	0.0023	ng/g
PCB 167 (BZ)	0.049		0.010	0.0012	ng/g
PCB 189 (BZ)	0.0042	J	0.010	0.0011	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-FT-CRAWFISH-24
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 003	Work Order #....:	M33QL1AA	Matrix....:	TA
Date Sampled....:	06/04/14	Date Received....:	06/14/14	Dilution Factor:	1
Prep Date....:	06/18/14	Analysis Date....:	06/24/14		
Prep Batch #:	4169044				
Initial Wgt/Vol :	10 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	57	30 - 140
13C12-PCB 3	49	30 - 140
13C12-PCB 4	73	30 - 140
13C12-PCB 15	75	30 - 140
13C12-PCB 19	89	30 - 140
13C12-PCB 37	83	30 - 140
13C12-PCB 54	76	30 - 140
13C12-PCB 77	79	30 - 140
13C12-PCB 81	77	30 - 140
13C12-PCB 104	80	30 - 140
13C12-PCB 105	84	30 - 140
13C12-PCB 114	84	30 - 140
13C12-PCB 118	82	30 - 140
13C12-PCB 123	80	30 - 140
13C12-PCB 126	77	30 - 140
13C12-PCB 155	81	30 - 140
13C12-PCB 156	84 C	30 - 140
13C12-PCB 157	84 C	30 - 140
13C12-PCB 167	87	30 - 140
13C12-PCB 169	85	30 - 140
13C12-PCB 170	78	30 - 140
13C12-PCB 188	90	30 - 140
13C12-PCB 189	97	30 - 140
13C12-PCB 202	90	30 - 140
13C12-PCB 205	75	30 - 140
13C12-PCB 206	86	30 - 140
13C12-PCB 208	89	30 - 140
13C12-PCB 209	75	30 - 140

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	85	40 - 125
13C12-PCB 111	84	40 - 125
13C12-PCB 178	80	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-060414-FT-CRAWFISH-24
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 003	Work Order #....:	M33QL1AA	Matrix....:	TA
Date Sampled....:	06/04/14	Date Received....:	06/14/14	Dilution Factor:	1
Prep Date....:	06/18/14	Analysis Date....:	06/24/14		
Prep Batch #:	4169044				
Initial Wgt/Vol :	10 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

QUALIFIERS

C Co-eluting isomer.
J Estimated Result.
Q Estimated maximum possible concentration (EMPC).

TestAmerica Pittsburgh
Sample ID: 055364-T2-061114-SE-COMP-3
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 004	Work Order #....:	M33QM1AD	Matrix....:	SE
Date Sampled....:	06/11/14	Date Received....:	06/14/14	Dilution Factor:	5
Prep Date....:	06/18/14	Analysis Date....:	06/25/14	Percent Moisture	31
Prep Batch #:	4169035				
Initial Wgt/Vol :	14.5 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Linda K. McWhirter				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	1.1		0.050	0.0051	ng/g
PCB 81 (BZ)	0.035	J	0.050	0.0051	ng/g
PCB 126 (BZ)	0.035	J	0.050	0.0068	ng/g
PCB 105 (BZ)	6.3		0.050	0.0058	ng/g
PCB 118 (BZ)	21		0.050	0.0057	ng/g
PCB 123 (BZ)	0.28	Q	0.050	0.0061	ng/g
PCB 114 (BZ)	0.43		0.050	0.0056	ng/g
PCB 169 (BZ)	0.0089	J	0.050	0.0043	ng/g
PCB 156 (BZ)	2.2	C	0.050	0.0085	ng/g
PCB 157 (BZ)	2.2	C156	0.050	0.0085	ng/g
PCB 167 (BZ)	0.68		0.050	0.0048	ng/g
PCB 189 (BZ)	0.096		0.050	0.0036	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-061114-SE-COMP-3
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 004	Work Order #....:	M33QM1AD	Matrix....:	SE
Date Sampled....:	06/11/14	Date Received....:	06/14/14	Dilution Factor:	5
Prep Date....:	06/18/14	Analysis Date....:	06/25/14	Percent Moisture	31
Prep Batch #:	4169035				
Initial Wgt/Vol :	14.5 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Linda K. McWhirter				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	54	30 - 140
13C12-PCB 3	51	30 - 140
13C12-PCB 4	70	30 - 140
13C12-PCB 15	67	30 - 140
13C12-PCB 19	89	30 - 140
13C12-PCB 37	83	30 - 140
13C12-PCB 54	60	30 - 140
13C12-PCB 77	82	30 - 140
13C12-PCB 81	78	30 - 140
13C12-PCB 104	82	30 - 140
13C12-PCB 105	84	30 - 140
13C12-PCB 114	84	30 - 140
13C12-PCB 118	83	30 - 140
13C12-PCB 123	82	30 - 140
13C12-PCB 126	80	30 - 140
13C12-PCB 155	83	30 - 140
13C12-PCB 156	88	30 - 140
13C12-PCB 157	88	30 - 140
13C12-PCB 167	89	30 - 140
13C12-PCB 169	94	30 - 140
13C12-PCB 170	87	30 - 140
13C12-PCB 188	86	30 - 140
13C12-PCB 189	89	30 - 140
13C12-PCB 202	92	30 - 140
13C12-PCB 205	81	30 - 140
13C12-PCB 206	96	30 - 140
13C12-PCB 208	91	30 - 140
13C12-PCB 209	84	30 - 140

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	80	40 - 125
13C12-PCB 111	85	40 - 125
13C12-PCB 178	80	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-061114-SE-COMP-3
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 004	Work Order #....:	M33QM1AD	Matrix....:	SE
Date Sampled....:	06/11/14	Date Received....:	06/14/14	Dilution Factor:	5
Prep Date....:	06/18/14	Analysis Date....:	06/25/14	Percent Moisture	31
Prep Batch #:	4169035				
Initial Wgt/Vol :	14.5 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Linda K. McWhirter				

Sample results, minimum levels, and estimated detection limits are reported on a dry weight basis and have been adjusted for percent moisture.

QUALIFIERS

- C Co-eluting isomer.
- J Estimated Result.
- Q Estimated maximum possible concentration (EMPC).

TestAmerica Pittsburgh
Sample ID: 055364-T2-061114-SE-COMP-4
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 005	Work Order #....:	M33QN1AD	Matrix....:	SE
Date Sampled....:	06/11/14	Date Received....:	06/14/14	Dilution Factor:	5
Prep Date....:	06/18/14	Analysis Date....:	06/24/14	Percent Moisture	32
Prep Batch #:	4169035				
Initial Wgt/Vol :	3 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	3.3		0.25	0.054	ng/g
PCB 81 (BZ)	0.049	Q J	0.25	0.054	ng/g
PCB 126 (BZ)	0.26		0.25	0.073	ng/g
PCB 105 (BZ)	16		0.25	0.066	ng/g
PCB 118 (BZ)	100		0.25	0.059	ng/g
PCB 123 (BZ)	1.0	Q	0.25	0.068	ng/g
PCB 114 (BZ)	1.3		0.25	0.058	ng/g
PCB 169 (BZ)	ND		0.25	0.052	ng/g
PCB 156 (BZ)	9.9	C	0.25	0.091	ng/g
PCB 157 (BZ)	9.9	C156	0.25	0.091	ng/g
PCB 167 (BZ)	3.2		0.25	0.052	ng/g
PCB 189 (BZ)	0.47		0.25	0.041	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-061114-SE-COMP-4
Trace Level Organic Compounds

Lot - Sample #....: H4F160406 - 005	Work Order #....: M33QN1AD	Matrix....: SE
Date Sampled....: 06/11/14	Date Received....: 06/14/14	Dilution Factor: 5
Prep Date....: 06/18/14	Analysis Date....: 06/24/14	Percent Moisture 32
Prep Batch #: 4169035		
Initial Wgt/Vol : 3 g	Instrument ID....: M1D	Method: EPA-22 1668A
Analyst ID....: Jon M. Nordquist		

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	60	30 - 140
13C12-PCB 3	56	30 - 140
13C12-PCB 4	66	30 - 140
13C12-PCB 15	63	30 - 140
13C12-PCB 19	96	30 - 140
13C12-PCB 37	84	30 - 140
13C12-PCB 54	77	30 - 140
13C12-PCB 77	82	30 - 140
13C12-PCB 81	79	30 - 140
13C12-PCB 104	81	30 - 140
13C12-PCB 105	84	30 - 140
13C12-PCB 114	88	30 - 140
13C12-PCB 118	85	30 - 140
13C12-PCB 123	82	30 - 140
13C12-PCB 126	81	30 - 140
13C12-PCB 155	82	30 - 140
13C12-PCB 156	87 C	30 - 140
13C12-PCB 157	87 C	30 - 140
13C12-PCB 167	90	30 - 140
13C12-PCB 169	90	30 - 140
13C12-PCB 170	86	30 - 140
13C12-PCB 188	88	30 - 140
13C12-PCB 189	100	30 - 140
13C12-PCB 202	88	30 - 140
13C12-PCB 205	83	30 - 140
13C12-PCB 206	94	30 - 140
13C12-PCB 208	98	30 - 140
13C12-PCB 209	82	30 - 140

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	83	40 - 125
13C12-PCB 111	91	40 - 125
13C12-PCB 178	80	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-061114-SE-COMP-4
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 005	Work Order #....:	M33QN1AD	Matrix....:	SE
Date Sampled....:	06/11/14	Date Received....:	06/14/14	Dilution Factor:	5
Prep Date....:	06/18/14	Analysis Date....:	06/24/14	Percent Moisture	32
Prep Batch #:	4169035				
Initial Wgt/Vol :	3 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

Sample results, minimum levels, and estimated detection limits are reported on a dry weight basis and have been adjusted for percent moisture.

QUALIFIERS

- C Co-eluting isomer.
- J Estimated Result.
- Q Estimated maximum possible concentration (EMPC).

TestAmerica Pittsburgh
Sample ID: 055364-T2-061114-SE-COMP-5
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 006	Work Order #....:	M33QP1AD	Matrix....:	SE
Date Sampled....:	06/11/14	Date Received....:	06/14/14	Dilution Factor:	1
Prep Date....:	06/18/14	Analysis Date....:	06/24/14	Percent Moisture	28
Prep Batch #:	4169035				
Initial Wgt/Vol :	14 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

PARAMETER	RESULT		MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	0.077		0.0099	0.0010	ng/g
PCB 81 (BZ)	0.0035	J	0.0099	0.00098	ng/g
PCB 126 (BZ)	0.038		0.0099	0.0015	ng/g
PCB 105 (BZ)	0.79		0.0099	0.0014	ng/g
PCB 118 (BZ)	3.6		0.0099	0.0013	ng/g
PCB 123 (BZ)	0.18	Q	0.0099	0.0014	ng/g
PCB 114 (BZ)	0.038		0.0099	0.0013	ng/g
PCB 169 (BZ)	0.012		0.0099	0.0012	ng/g
PCB 156 (BZ)	1.1	C	0.0099	0.0025	ng/g
PCB 157 (BZ)	1.1	C156	0.0099	0.0025	ng/g
PCB 167 (BZ)	0.44		0.0099	0.0013	ng/g
PCB 189 (BZ)	0.066		0.0099	0.0012	ng/g

TestAmerica Pittsburgh
Sample ID: 055364-T2-061114-SE-COMP-5
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 006	Work Order #....:	M33QP1AD	Matrix....:	SE
Date Sampled....:	06/11/14	Date Received....:	06/14/14	Dilution Factor:	1
Prep Date....:	06/18/14	Analysis Date....:	06/24/14	Percent Moisture	28
Prep Batch #:	4169035				
Initial Wgt/Vol :	14 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

INTERNAL STANDARDS	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	55	30 - 140
13C12-PCB 3	55	30 - 140
13C12-PCB 4	64	30 - 140
13C12-PCB 15	65	30 - 140
13C12-PCB 19	82	30 - 140
13C12-PCB 37	83	30 - 140
13C12-PCB 54	74	30 - 140
13C12-PCB 77	80	30 - 140
13C12-PCB 81	79	30 - 140
13C12-PCB 104	81	30 - 140
13C12-PCB 105	84	30 - 140
13C12-PCB 114	85	30 - 140
13C12-PCB 118	82	30 - 140
13C12-PCB 123	80	30 - 140
13C12-PCB 126	79	30 - 140
13C12-PCB 155	79	30 - 140
13C12-PCB 156	84	30 - 140
13C12-PCB 157	84	30 - 140
13C12-PCB 167	89	30 - 140
13C12-PCB 169	92	30 - 140
13C12-PCB 170	88	30 - 140
13C12-PCB 188	88	30 - 140
13C12-PCB 189	93	30 - 140
13C12-PCB 202	85	30 - 140
13C12-PCB 205	80	30 - 140
13C12-PCB 206	91	30 - 140
13C12-PCB 208	89	30 - 140
13C12-PCB 209	75	30 - 140

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	82	40 - 125
13C12-PCB 111	86	40 - 125
13C12-PCB 178	84	40 - 125

TestAmerica Pittsburgh
Sample ID: 055364-T2-061114-SE-COMP-5
Trace Level Organic Compounds

Lot - Sample #....:	H4F160406 - 006	Work Order #....:	M33QP1AD	Matrix....:	SE
Date Sampled....:	06/11/14	Date Received....:	06/14/14	Dilution Factor:	1
Prep Date....:	06/18/14	Analysis Date....:	06/24/14	Percent Moisture	28
Prep Batch #:	4169035				
Initial Wgt/Vol :	14 g	Instrument ID....:	M1D	Method:	EPA-22 1668A
Analyst ID....:	Jon M. Nordquist				

Sample results, minimum levels, and estimated detection limits are reported on a dry weight basis and have been adjusted for percent moisture.

QUALIFIERS

C Co-eluting isomer.
J Estimated Result.
Q Estimated maximum possible concentration (EMPC).

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F180000 - 035B	Work Order #....: M34H51AA	Matrix....: SOLID
Dilution Factor: 1		
Prep Date....: 06/18/14	Analysis Date....: 06/24/14	Percent Moisture: 0.0
Prep Batch #: 4169035		
Initial Wgt/Vol : 10 g	Instrument ID....: M1D	Method: EPA-22 1668A
Analyst ID....: Linda K. McWhirter		

PARAMETER	RESULT	MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	ND	0.010	0.00043	ng/g
PCB 81 (BZ)	ND	0.010	0.00041	ng/g
PCB 126 (BZ)	ND	0.010	0.00044	ng/g
PCB 105 (BZ)	ND	0.010	0.00037	ng/g
PCB 118 (BZ)	ND	0.010	0.00036	ng/g
PCB 123 (BZ)	ND	0.010	0.00040	ng/g
PCB 114 (BZ)	ND	0.010	0.00036	ng/g
PCB 169 (BZ)	ND	0.010	0.00039	ng/g
PCB 156 (BZ)	ND	0.010	0.00069	ng/g
PCB 157 (BZ)	ND	0.010	0.00069	ng/g
PCB 167 (BZ)	ND	0.010	0.00036	ng/g
PCB 189 (BZ)	ND	0.010	0.00032	ng/g

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F180000 - 035B
Dilution Factor: 1
Prep Date....: 06/18/14
Prep Batch #: 4169035
Initial Wgt/Vol : 10 g
Analyst ID....: Linda K. McWhirter

Work Order #....: M34H51AA

Matrix....: SOLID

Analysis Date....: 06/24/14

Percent Moisture: 0.0

Instrument ID....: M1D

Method: EPA-22 1668A

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	59	30 - 140
13C12-PCB 3	52	30 - 140
13C12-PCB 4	68	30 - 140
13C12-PCB 15	58	30 - 140
13C12-PCB 19	82	30 - 140
13C12-PCB 37	77	30 - 140
13C12-PCB 54	73	30 - 140
13C12-PCB 77	76	30 - 140
13C12-PCB 81	75	30 - 140
13C12-PCB 104	81	30 - 140
13C12-PCB 105	88	30 - 140
13C12-PCB 114	87	30 - 140
13C12-PCB 118	85	30 - 140
13C12-PCB 123	84	30 - 140
13C12-PCB 126	82	30 - 140
13C12-PCB 155	82	30 - 140
13C12-PCB 156	93	30 - 140
13C12-PCB 157	93	30 - 140
13C12-PCB 167	95	30 - 140
13C12-PCB 169	96	30 - 140
13C12-PCB 170	87	30 - 140
13C12-PCB 188	88	30 - 140
13C12-PCB 189	90	30 - 140
13C12-PCB 202	96	30 - 140
13C12-PCB 205	81	30 - 140
13C12-PCB 206	95	30 - 140
13C12-PCB 208	92	30 - 140
13C12-PCB 209	83	30 - 140
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	82	40 - 125
13C12-PCB 111	86	40 - 125
13C12-PCB 178	83	40 - 125

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F180000 - 035B
Dilution Factor: 1
Prep Date....: 06/18/14
Prep Batch #: 4169035
Initial Wgt/Vol : 10 g
Analyst ID....: Linda K. McWhirter

Work Order #....: M34H51AA

Matrix....: SOLID

Analysis Date....: 06/24/14

Percent Moisture: 0.0

Instrument ID....: M1D

Method: EPA-22 1668A

QUALIFIERS

C Co-eluting isomer.

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F160406 Work Order # ...: M34H51AC-LCS Matrix: SOLID
 LCS Lot-Sample# : H4F180000 - 035
 Prep Date: 06/18/14 Analysis Date ..: 06/24/14
 Prep Batch # ...: 4169035
 Dilution Factor : 1
 Analyst ID.....: Linda K. McWhirter Instrument ID..: M1D Method.....: EPA-22 1668A
 Initial Wgt/Vol: 10 g

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RECOVERY LIMITS
PCB 77 (BZ)	0.500	0.500	ng/g	100	(50 - 150)
PCB 81 (BZ)	0.500	0.494	ng/g	99	(50 - 150)
PCB 126 (BZ)	0.500	0.578	ng/g	116	(50 - 150)
PCB 105 (BZ)	0.500	0.551	ng/g	110	(50 - 150)
PCB 118 (BZ)	0.500	0.530	ng/g	106	(50 - 150)
PCB 123 (BZ)	0.500	0.606	ng/g	121	(50 - 150)
PCB 114 (BZ)	0.500	0.565	ng/g	113	(50 - 150)
PCB 169 (BZ)	0.500	0.485	ng/g	97	(50 - 150)
PCB 156 (BZ)	1.00	1.06	ng/g	106 C	(50 - 150)
PCB 157 (BZ)	1.00	1.06	ng/g	106 C C156	(50 - 150)
PCB 167 (BZ)	0.500	0.543	ng/g	109	(50 - 150)
PCB 189 (BZ)	0.500	0.558	ng/g	112	(50 - 150)

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	55	(30 - 140)
13C12-PCB 3	48	(30 - 140)
13C12-PCB 4	65	(30 - 140)
13C12-PCB 15	58	(30 - 140)
13C12-PCB 19	74	(30 - 140)
13C12-PCB 37	74	(30 - 140)
13C12-PCB 54	68	(30 - 140)
13C12-PCB 77	74	(30 - 140)
13C12-PCB 81	72	(30 - 140)
13C12-PCB 104	76	(30 - 140)
13C12-PCB 105	82	(30 - 140)
13C12-PCB 114	81	(30 - 140)
13C12-PCB 118	80	(30 - 140)
13C12-PCB 123	80	(30 - 140)
13C12-PCB 126	78	(30 - 140)
13C12-PCB 155	79	(30 - 140)
13C12-PCB 156	91 C	(30 - 140)
13C12-PCB 157	91 C	(30 - 140)
13C12-PCB 167	87	(30 - 140)
13C12-PCB 169	94	(30 - 140)
13C12-PCB 170	85	(30 - 140)
13C12-PCB 188	83	(30 - 140)
13C12-PCB 189	88	(30 - 140)
13C12-PCB 202	90	(30 - 140)
13C12-PCB 205	80	(30 - 140)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F160406
LCS Lot-Sample#: H4F180000 - 035

Work Order # ...: M34H51AC-LCS

Matrix: SOLID

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 206	96	(30 - 140)
13C12-PCB 208	89	(30 - 140)
13C12-PCB 209	80	(30 - 140)
SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 28	76	(40 - 125)
13C12-PCB 111	80	(40 - 125)
13C12-PCB 178	77	(40 - 125)

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

C Co-eluting isomer.

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F180000 - 044B **Work Order #....:** M34K31AA **Matrix....:** BIOLOGICAL
Dilution Factor: 1
Prep Date....: 06/18/14 **Analysis Date....:** 06/24/14
Prep Batch #: 4169044
Initial Wgt/Vol : 10 g **Instrument ID....:** M1D **Method:** EPA-22 1668A
Analyst ID....: Jon M. Nordquist

PARAMETER	RESULT	MINIMUM LEVEL	ESTIMATED DETECTION LIMIT	UNITS
PCB 77 (BZ)	ND	0.010	0.00070	ng/g
PCB 81 (BZ)	ND	0.010	0.00065	ng/g
PCB 126 (BZ)	ND	0.010	0.00078	ng/g
PCB 105 (BZ)	ND	0.010	0.00073	ng/g
PCB 118 (BZ)	ND	0.010	0.00068	ng/g
PCB 123 (BZ)	ND	0.010	0.00075	ng/g
PCB 114 (BZ)	ND	0.010	0.00066	ng/g
PCB 169 (BZ)	ND	0.010	0.00078	ng/g
PCB 156 (BZ)	ND	0.010	0.0014	ng/g
PCB 157 (BZ)	ND	0.010	0.0014	ng/g
PCB 167 (BZ)	ND	0.010	0.00080	ng/g
PCB 189 (BZ)	ND	0.010	0.00077	ng/g

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F180000 - 044B
Dilution Factor: 1
Prep Date....: 06/18/14
Prep Batch #: 4169044
Initial Wgt/Vol : 10 g
Analyst ID....: Jon M. Nordquist

Work Order #....: M34K31AA

Matrix....: BIOLOGICAL

Analysis Date....: 06/24/14

Instrument ID....: M1D

Method: EPA-22 1668A

<u>INTERNAL STANDARDS</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 1	60	30 - 140
13C12-PCB 3	57	30 - 140
13C12-PCB 4	66	30 - 140
13C12-PCB 15	63	30 - 140
13C12-PCB 19	84	30 - 140
13C12-PCB 37	76	30 - 140
13C12-PCB 54	74	30 - 140
13C12-PCB 77	75	30 - 140
13C12-PCB 81	75	30 - 140
13C12-PCB 104	79	30 - 140
13C12-PCB 105	81	30 - 140
13C12-PCB 114	84	30 - 140
13C12-PCB 118	81	30 - 140
13C12-PCB 123	79	30 - 140
13C12-PCB 126	77	30 - 140
13C12-PCB 155	79	30 - 140
13C12-PCB 156	83	30 - 140
13C12-PCB 157	83	30 - 140
13C12-PCB 167	83	30 - 140
13C12-PCB 169	85	30 - 140
13C12-PCB 170	83	30 - 140
13C12-PCB 188	89	30 - 140
13C12-PCB 189	89	30 - 140
13C12-PCB 202	89	30 - 140
13C12-PCB 205	75	30 - 140
13C12-PCB 206	84	30 - 140
13C12-PCB 208	83	30 - 140
13C12-PCB 209	70	30 - 140
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	80	40 - 125
13C12-PCB 111	84	40 - 125
13C12-PCB 178	83	40 - 125

Method Blank Report
Trace Level Organic Compounds

Lot - Sample #....: H4F180000 - 044B
Dilution Factor: 1
Prep Date....: 06/18/14
Prep Batch #: 4169044
Initial Wgt/Vol : 10 g
Analyst ID....: Jon M. Nordquist

Work Order #....: M34K31AA

Matrix....: BIOLOGICAL

Analysis Date....: 06/24/14

Instrument ID....: M1D

Method: EPA-22 1668A

QUALIFIERS

C Co-eluting isomer.

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F160406 Work Order # ...: M34K31AC-LCS Matrix: BIOLOGICA
 LCS Lot-Sample#: H4F180000 - 044
 Prep Date: 06/18/14 Analysis Date ..: 06/24/14
 Prep Batch # ...: 4169044
 Dilution Factor : 1
 Analyst ID.....: Jon M. Nordquist Instrument ID..: M1D Method.....: EPA-22 1668A
 Initial Wgt/Vol: 10 g

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	RECOVERY LIMITS
PCB 77 (BZ)	0.500	0.495	ng/g	99	(50 - 150)
PCB 81 (BZ)	0.500	0.481	ng/g	96	(50 - 150)
PCB 126 (BZ)	0.500	0.587	ng/g	117	(50 - 150)
PCB 105 (BZ)	0.500	0.542	ng/g	108	(50 - 150)
PCB 118 (BZ)	0.500	0.522	ng/g	104	(50 - 150)
PCB 123 (BZ)	0.500	0.609	ng/g	122	(50 - 150)
PCB 114 (BZ)	0.500	0.562	ng/g	112	(50 - 150)
PCB 169 (BZ)	0.500	0.502	ng/g	100	(50 - 150)
PCB 156 (BZ)	1.00	1.09	ng/g	109 C	(50 - 150)
PCB 157 (BZ)	1.00	1.09	ng/g	109 C C156	(50 - 150)
PCB 167 (BZ)	0.500	0.557	ng/g	111	(50 - 150)
PCB 189 (BZ)	0.500	0.547	ng/g	109	(50 - 150)

INTERNAL STANDARD	PERCENT RECOVERY	RECOVERY LIMITS
13C12-PCB 1	62	(30 - 140)
13C12-PCB 3	59	(30 - 140)
13C12-PCB 4	71	(30 - 140)
13C12-PCB 15	69	(30 - 140)
13C12-PCB 19	80	(30 - 140)
13C12-PCB 37	79	(30 - 140)
13C12-PCB 54	74	(30 - 140)
13C12-PCB 77	80	(30 - 140)
13C12-PCB 81	78	(30 - 140)
13C12-PCB 104	78	(30 - 140)
13C12-PCB 105	82	(30 - 140)
13C12-PCB 114	82	(30 - 140)
13C12-PCB 118	80	(30 - 140)
13C12-PCB 123	78	(30 - 140)
13C12-PCB 126	78	(30 - 140)
13C12-PCB 155	79	(30 - 140)
13C12-PCB 156	84 C	(30 - 140)
13C12-PCB 157	84 C	(30 - 140)
13C12-PCB 167	85	(30 - 140)
13C12-PCB 169	88	(30 - 140)
13C12-PCB 170	82	(30 - 140)
13C12-PCB 188	88	(30 - 140)
13C12-PCB 189	95	(30 - 140)
13C12-PCB 202	86	(30 - 140)
13C12-PCB 205	77	(30 - 140)

LABORATORY CONTROL SAMPLE DATA REPORT

Trace Level Organic Compounds

Client Lot # ...: H4F160406

Work Order # ...: M34K31AC-LCS

Matrix: BIOLOGICA

LCS Lot-Sample#: H4F180000 - 044

<u>INTERNAL STANDARD</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 206	84	(30 - 140)
13C12-PCB 208	83	(30 - 140)
13C12-PCB 209	64	(30 - 140)
<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C12-PCB 28	80	(40 - 125)
13C12-PCB 111	82	(40 - 125)
13C12-PCB 178	82	(40 - 125)

Notes:

Calculations are performed before rounding to avoid round-off errors in calculated results.

Bold print denotes control parameters

C Co-eluting isomer.

Sample Receipt Documentation

Chain of Custody Record

[illegible]

TESTAMERICA KNOXVILLE SAMPLE RECEIPT/CONDITION UPON RECEIPT ANOMALY CHECKLIST

Lot Number: 144F160406

Review Items	Yes	No	NA	If No, what was the problem?	Comments/Actions Taken
1. Do sample container labels match COC? (IDs, Dates, Times)	<input checked="" type="checkbox"/>			<input type="checkbox"/> 1a Do not match COC <input type="checkbox"/> 1b Incomplete information <input type="checkbox"/> 1c Marking smeared <input type="checkbox"/> 1d Label torn <input type="checkbox"/> 1e No label <input type="checkbox"/> 1f COC not received <input type="checkbox"/> 1g Other:	
2. Is the cooler temperature within limits? (> freezing temp. of water to 6 °C, VOST: 10°C) Thermometer ID : <u>SL57</u> Correction factor: <u>0.0</u>	<input checked="" type="checkbox"/>			<input type="checkbox"/> 2a Temp Blank = _____ <input type="checkbox"/> 2b Cooler Temp = _____ <input type="checkbox"/> 2c Cooling initiated for recently collected samples, ice present.	
3. Were samples received with correct chemical preservative (excluding Encore)?			<input checked="" type="checkbox"/>	<input type="checkbox"/> 3a See box 3A for pH Preservation <input type="checkbox"/> 3b Other:	
4. Were custody seals present/intact on cooler and/or containers?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 4a Not present <input type="checkbox"/> 4b Not intact <input type="checkbox"/> 4c Other:	
5. Were all of the samples listed on the COC received?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 5a Samples received-not on COC <input type="checkbox"/> 5b Samples not received-on COC	
6. Were all of the sample containers received intact?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 6a Leaking <input type="checkbox"/> 6b Broken	
7. Were VOA samples received without headspace?	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/> 7a Headspace (VOA only)	
8. Were samples received in appropriate containers?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 8a Improper container	
9. Did you check for residual chlorine, if necessary? (e.g. 1613B, 1668) Chlorine test strip lot number:			<input checked="" type="checkbox"/>	<input type="checkbox"/> 9a Could not be determined due to matrix interference	
10. Were samples received within holding time?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 10a Holding time expired	
11. For rad samples, was sample activity info. provided?			<input checked="" type="checkbox"/>	<input type="checkbox"/> Incomplete information	
12. For 1613B water samples is pH<9?			<input checked="" type="checkbox"/>	If no, was pH adjusted to pH 7 - 9 with sulfuric acid? _____	pH test strip lot number: _____
13. Are the shipping containers intact?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 13a Leaking <input type="checkbox"/> 13b Other:	<div>Box 3A: pH Preservation</div> <div>Box 9A: Residual Chlorine</div>
14. Was COC relinquished? (Signed/Dated/Timed)	<input checked="" type="checkbox"/>			<input type="checkbox"/> 14a Not relinquished	Preservative: _____
15. Are tests/parameters listed for each sample?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 15a Incomplete information	Lot Number: _____
16. Is the matrix of the samples noted?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 15a Incomplete information	Exp Date: _____
17. Is the date/time of sample collection noted?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 15a Incomplete information	Analyst: _____
18. Is the client and project name/# identified?	<input checked="" type="checkbox"/>			<input type="checkbox"/> 15a Incomplete information	Date: _____
19. Was the sampler identified on the COC?			<input checked="" type="checkbox"/>	<input type="checkbox"/> 19a Other	Time: _____
Quote #: <u>90633</u> PM Instructions: <u>mt</u>					

Sample Receiving Associate: [Signature] Date: 6-16-14

QA026R28.doc, 042414



**CONESTOGA-ROVERS
& ASSOCIATES**

CHAIN OF CUSTODY RECORD

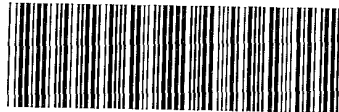
Address: 5551 Corporate Blvd., Suite 200
Phone: 225-292-9007 Fax: 225-952-2978

COC NO.: 42817

PAGE 1 OF 1

(See Reverse Side for Instructions)

Project No/ Phase/Task Code: <u>055364 - ** - **</u>				Laboratory Name: <u>Test America</u>				Lab Location: <u>Pittsburgh, PA</u>				SSOW ID: <u>—</u>			
Project Name: <u>Devil's Swamp Lake</u>				Lab Contact: <u>Jill Colussy</u>				Lab Quote No: <u>(101008)</u>				Cooler No: <u>1</u>			
Project Location: <u>Baton Rouge, LA</u>				SAMPLE TYPE				CONTAINER QUANTITY & PRESERVATION				ANALYSIS REQUESTED (See Back of COC for Definitions)			
Chemistry Contact: <u>Debbie Brennan</u>				Matrix Code (see back of COC) Grab (G) or Comp (C)				Unpreserved Hydrochloric Acid (HCl) Nitric Acid (HNO ₃) Sulfuric Acid (H ₂ SO ₄) Sodium Hydroxide (NaOH) Methanol/Water (Soil VOC) EnCores 3x5-g, 1x25-g Other: <u>Ziploc Bags</u>				Total Containers/Sample <u>11</u> PCB congeners (1st 1008) Lipids TOC - Lloyd Kahn Grain Size Moisture			
Sampler(s): <u>Alice Johnson</u>															
DATE (mm/dd/yy)				TIME (hh:mm)								MS/MSD Request			
SAMPLE IDENTIFICATION (Containers for each sample may be combined on one line)												Date Shipped: <u>6-11-14</u>			
												COMMENTS/ SPECIAL INSTRUCTIONS:			
1	<u>055364-TZ-060914-FT-CRAWFISH-22</u>			<u>06/09/14</u>	<u>1033</u>	<u>FT</u>	<u>C</u>								<u>5 crawfish</u>
2	<u>055364-TZ-051914-FT-CRAWFISH-23</u>			<u>05/19/14</u>	<u>0845</u>	<u>FT</u>	<u>C</u>								<u>3 crawfish</u>
3	<u>055364-TZ-060414-FT-CRAWFISH-24</u>			<u>06/04/14</u>	<u>0912</u>	<u>FT</u>	<u>C</u>								<u>4 crawfish</u>
4	<u>055364-TZ-061114-SE-COMP-3</u>			<u>06/11/14</u>	<u>1115</u>	<u>SE</u>	<u>C</u>	<u>3</u>							
5	<u>055364-TZ-061114-SE-COMP-4</u>			<u>06/11/14</u>	<u>1100</u>	<u>SE</u>	<u>C</u>	<u>3</u>							
6	<u>055364-TZ-061114-SE-COMP-5</u>			<u>06/11/14</u>	<u>1130</u>	<u>SE</u>	<u>C</u>	<u>3</u>							
7															
8															
9															
10															
11															
12															
13															
14															


 180-33804 Chain of Custody

TAT Required in business days (use separate COCs for different TATs): <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days <input type="checkbox"/> 1 Week <input type="checkbox"/> 2 Week <input checked="" type="checkbox"/> Other: <u>NORMAL</u>				Total Number of Containers: <u>12</u>		Notes/ Special Requirements:	
All Samples in Cooler must be on COC							

RELINQUISHED BY	COMPANY	DATE	TIME	RECEIVED BY	COMPANY	DATE	TIME
<u>Alice Johnson</u>	<u>CRA</u>	<u>06/11/14</u>	<u>1330</u>	<u>Debbie Brennan</u>	<u>TA</u>	<u>6-12/14</u>	<u>10:25</u>

THE CHAIN OF CUSTODY IS A LEGAL DOCUMENT — ALL FIELDS MUST BE COMPLETED ACCURATELY

Login Sample Receipt Checklist

Client: Conestoga-Rovers & Associates, Inc.

Job Number: 180-33804-1

Login Number: 33804

List Source: TestAmerica Pittsburgh

List Number: 1

Creator: Watson, Debbie

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Conestoga-Rovers & Associates, Inc.

Job Number: 180-33804-1

Login Number: 33804

List Number: 2

Creator: Gagne, Eric M

List Source: TestAmerica Burlington

List Creation: 06/16/14 11:44 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	Lab does not accept radioactive samples.
The cooler's custody seal, if present, is intact.	True	No NUMBERS
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	4.2°C. IR GUN ID 181. CF = 0
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	Received project as a subcontract.
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Attachment B

Boring Logs

BORING LOG				
Project:	Devil's Swamp Lake Site	File No.:	055364-00	
	13351 Scenic Highway		Date:	6/4/2014
	Baton Rouge, Louisiana		Drilling Co.:	CRA
Client:	Baton Rouge Disposal, LLC	Supervisor:	S. Marionneaux	
	Baton Rouge, Louisiana		Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/4/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

(1) MiniRAE 2000 Photoionization Detector



Water First Noted

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Conestoga-Rovers & Associates

BORING LOG			
Project: Devil's Swamp Lake Site 13351 Scenic Highway Baton Rouge, Louisiana	No. 3	File No.:	055364-00
		Date:	6/4/2014
		Drilling Co.:	CRA
Client: Baton Rouge Disposal, LLC Baton Rouge, Louisiana		Supervisor:	S. Marionneaux
		Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/4/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

(1) MiniRAE 2000 Photoionization Detector



Water First Noted

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Soil Classification Based on Visual-Manual Procedure

Conestoga-Rovers & Associates

BORING LOG				
Project:	Devil's Swamp Lake Site	File No.:	055364-00	
	13351 Scenic Highway		Date:	6/4/2014
	Baton Rouge, Louisiana		Drilling Co.:	CRA
Client:	Baton Rouge Disposal, LLC	Supervisor:	S. Marionneaux	
	Baton Rouge, Louisiana		Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/4/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

(1) MiniRAE 2000 Photoionization Detector



Water First Noted

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Soil Classification Based on Visual-Manual Procedure


Conestoga-Rovers & Associates

BORING LOG				
Project:	Devil's Swamp Lake Site	File No.:	055364-00	
	13351 Scenic Highway		Date:	6/4/2014
	Baton Rouge, Louisiana		Drilling Co.:	CRA
Client:	Baton Rouge Disposal, LLC	Supervisor:	S. Marionneaux	
	Baton Rouge, Louisiana		Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/4/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

-  Water First Noted

Conestoga-Rovers & Associates

BORING LOG				
Project:	Devil's Swamp Lake Site	File No.:	055364-00	
	13351 Scenic Highway		Date:	6/4/2014
	Baton Rouge, Louisiana		Drilling Co.:	CRA
Client:	Baton Rouge Disposal, LLC	Supervisor:	S. Marionneaux	
	Baton Rouge, Louisiana		Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/4/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

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Water First Noted

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Conestoga-Rovers & Associates

BORING LOG			
Project:	Devil's Swamp Lake Site 13351 Scenic Highway Baton Rouge, Louisiana	File No.:	055364-00
		Date:	6/4/2014
	No. 9	Drilling Co.:	CRA
		Supervisor:	S. Marionneaux
Client:	Baton Rouge Disposal, LLC Baton Rouge, Louisiana		
		Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/4/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

(1) MiniRAE 2000 Photoionization Detector



Water First Noted

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Soil Classification Based on Visual-Manual Procedure

Conestoga-Rovers & Associates

BORING LOG			
Project:	Devil's Swamp Lake Site 13351 Scenic Highway Baton Rouge, Louisiana	File No.:	055364-00
		Date:	6/4/2014
	No. 10	Drilling Co.:	CRA
		Supervisor:	S. Marionneaux
Client:	Baton Rouge Disposal, LLC Baton Rouge, Louisiana		
		Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/4/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

(1) MiniRAE 2000 Photoionization Detector



Water First Noted

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Soil Classification Based on Visual-Manual Procedure

Conestoga-Rovers & Associates

BORING LOG			
Project:	Devil's Swamp Lake Site	No. 12	File No.:
	13351 Scenic Highway		Date:
	Baton Rouge, Louisiana		Drilling Co.:
Client:	Baton Rouge Disposal, LLC		Supervisor:
	Baton Rouge, Louisiana		
			Logged by:

File No.: 055364-00
Date: 6/11/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

(1) MiniRAE 2000 Photoionization Detector



Water First Noted

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Soil Classification Based on Visual-Manual Procedure

Conestoga-Rovers & Associates

BORING LOG				
Project:	Devil's Swamp Lake Site	File No.:	055364-00	
	13351 Scenic Highway		Date:	6/11/2014
	Baton Rouge, Louisiana		Drilling Co.:	CRA
	No. 13	Supervisor:	S. Marionneaux	
Client:	Baton Rouge Disposal, LLC	Logged by:	G. Douaihi	
	Baton Rouge, Louisiana			

File No.: 055364-00
Date: 6/11/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

(1) MiniRAE 2000 Photoionization Detector



Water First Noted

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Soil Classification Based on Visual-Manual Procedure

Conestoga-Rovers & Associates

BORING LOG				
Project:	Devil's Swamp Lake Site	File No.:	055364-00	
	13351 Scenic Highway		Date:	6/11/2014
	Baton Rouge, Louisiana		Drilling Co.:	CRA
Client:	Baton Rouge Disposal, LLC	Supervisor:	S. Marionneaux	
	Baton Rouge, Louisiana		Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/11/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

(1) MiniRAE 2000 Photoionization Detector



Water First Noted

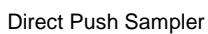
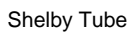
Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Conestoga-Rovers & Associates

BORING LOG			
Project:	Devil's Swamp Lake Site	File No.:	055364-00
	13351 Scenic Highway	Date:	6/11/2014
	Baton Rouge, Louisiana	Drilling Co.:	CRA
	No. 16	Supervisor:	S. Marionneaux
Client:	Baton Rouge Disposal, LLC		
	Baton Rouge, Louisiana	Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/11/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

(1) MiniRAE 2000 Photoionization Detector



Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Conestoga-Rovers & Associates

BORING LOG				
Project:	Devil's Swamp Lake Site	File No.:	055364-00	
	13351 Scenic Highway		Date:	6/11/2014
	Baton Rouge, Louisiana		Drilling Co.:	CRA
	No. 19	Supervisor:	S. Marionneaux	
Client:	Baton Rouge Disposal, LLC	Logged by:	G. Douaihi	
	Baton Rouge, Louisiana			

File No.: 055364-00
Date: 6/11/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

(1) MiniRAE 2000 Photoionization Detector
 Stratification is Inferred And May Not be Exact.
 Soil Classification Based on Visual-Manual Procedure
Conestoga-Rovers & Associates

BORING LOG				
Project:	Devil's Swamp Lake Site	File No.:	055364-00	
	13351 Scenic Highway		Date:	6/11/2014
	Baton Rouge, Louisiana		Drilling Co.:	CRA
	No. 20	Supervisor:	S. Marionneaux	
Client:	Baton Rouge Disposal, LLC	Logged by:	G. Douaihi	
	Baton Rouge, Louisiana			

File No.: 055364-00
Date: 6/11/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

Shelby Tube



Direct Push Sampler



Auger Cuttings



No Recovery

(1) MiniRAE 2000 Photoionization Detector



Water First Noted

Stratification is Inferred And May Not be Exact.
Soil Classification Based on Visual-Manual Procedure

Conestoga-Rovers & Associates

BORING LOG			
Project:	Devil's Swamp Lake Site	File No.:	055364-00
	13351 Scenic Highway	Date:	6/11/2014
	Baton Rouge, Louisiana	Drilling Co.:	CRA
	No. 22	Supervisor:	S. Marionneaux
Client:	Baton Rouge Disposal, LLC		
	Baton Rouge, Louisiana	Logged by:	G. Douaihi

File No.: 055364-00
Date: 6/11/2014
Drilling Co.: CRA
Supervisor: S. Marionneaux

Logged by: G. Douaihi

[illegible]

- ## Conestoga-Rovers & Associates

Attachment C

Summary of the 2014 Bioaccumulation Modeling Approach and Results

**SUMMARY OF THE 2014 BIOACCUMULATION MODELING APPROACH AND RESULTS
TIER 2 REMEDIAL INVESTIGATION
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA**

Overview

On March 28, 2014, Conestoga-Rovers & Associates (CRA), on behalf of Clean Harbors Environmental Services, Inc. (Clean Harbors), submitted to the U.S. Environmental Protection Agency (EPA) and the Louisiana Department of Environmental Quality (LDEQ) the *Crawfish Sample Locations and Bioaccumulation Modeling* correspondence that included a summary of the bioaccumulation modeling approach and results describing development of sediment to biota accumulation factors (BSAFs) for crawfish collected in 2013 at the Devil's Swamp Lake Site in East Baton Rouge Parish, Louisiana (Site). Subsequent to the March 2014 submittal, discussions between EPA, LDEQ, Clean Harbors, and CRA resulted in a recommendation to conduct additional sampling to validate the BSAFs identified in the submittal.

On May 9, 2014, Clean Harbors submitted the *Tier 2 Remedial Investigation Work Plan Addendum* (Work Plan) that provided details for collection and chemical analysis of crawfish and sediment samples from the Site. Following approval by both the EPA and LDEQ on May 12, 2014, the Work Plan was implemented in May and June 2014. This summary includes a description of the development of BSAFs based on data collected in 2013 and during the 2014 sampling program.

The BSAFs presented in the *Crawfish Sample Locations and Bioaccumulation Modeling* correspondence of March 28, 2014 were calculated using sediment samples collected from the South Bayou Baton Rouge (SBBR) Area of Investigation (AOI) in 2012 and crawfish collected in 2013 in the SBBR and areas west of the assessment area. The BSAFs presented in the current summary are based on co-located crawfish and sediment samples. The 2011 and 2012 sediment sample data, the 2013 crawfish sample data, and the 2014 crawfish and sediment sample data were used to calculate BSAFs for whole body and tail tissue and exposure concentrations for the Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA). The BSAFs based on the 2014 data are compared to the BSAFs identified in the March 28, 2014 correspondence (2013 crawfish sample data) and factors contributing to differences discussed.

**SUMMARY OF THE 2014 BIOACCUMULATION MODELING APPROACH AND RESULTS
TIER 2 REMEDIAL INVESTIGATION
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA**

Methodology

Sediment to Whole Body Bioaccumulation

Sediment to biota accumulation factors (BSAFs) were developed for the 12 World Health Organization (WHO) polychlorinated biphenyls (PCB) congeners using data from the 2014 sampling program.

The BSAFs were calculated as:

$$BSAF = (C_{crawfish}/f_{lipid})/(C_{sediment}/f_{oc}) \quad \text{Equation 1}$$

Where:

BSAF	=	Sediment to Biota Accumulation Factor (unitless)
$C_{crawfish}$	=	Concentration of PCBs in crawfish (mg/kg wet weight)
f_{lipid}	=	Fraction of lipid in crawfish (unitless)
$C_{sediment}$	=	Concentration of PCBs in sediment (mg/kg dry weight)
f_{oc}	=	Fraction of total organic carbon in sediment (unitless).

As identified Equation 1, concentrations in crawfish were normalized for fraction of lipid (f_{lipid}) in whole body and sediment was normalized for fraction of TOC (f_{oc}) in sediment.

The values for $C_{crawfish}$, f_{lipid} , $C_{sediment}$, and f_{oc} entered into Equation 1 are the geometric means for the composite samples from the five Sampling Areas (Kay et al., 2005).

Sediment to Tail Bioaccumulation

Tail tissue of crawfish collected in the 2014 sampling program was not analyzed as a separate sample for PCBs due to insufficient sample volumes. To calculate concentrations of the WHO congeners in tail tissue, the ratio of the concentration in tail tissue relative to whole body tissue was identified for each of the 12 congeners based on the samples collected in 2013, which included analysis of tail tissue and summation of whole body concentrations. It is reasonably assumed that the levels of PCBs in the various crawfish body compartments are at a dynamic equilibrium and the toxicodynamics responsible for the distribution of PCBs in the tail vs. the whole body tissue are independent of the discussed factors that influence the magnitude of BSAFs. In other words, the relative ratios of PCBs in tails vs. the whole body tissue should be

**SUMMARY OF THE 2014 BIOACCUMULATION MODELING APPROACH AND RESULTS
TIER 2 REMEDIAL INVESTIGATION
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA**

relatively constant spatially and temporally (EPA, 2006). As such, the 2013 whole body-to-tail tissue ratio can be used to directly approximate the 2014 crawfish sample tissue ratio.

The rationale for calculating ratios for each congener is based on the 2013 data, which suggest that individual congeners may differentially bioaccumulate in tail tissue. For example, PCB-105, PCB-118, and PCB-156/157 (these two congeners co-elutriate) were detected in tail tissue for all 15 samples collected in 2013, whereas PCB-169 and PCB-189 were detected in only one of the 15 samples, and PCB-81 was not detected in any sample. As an additional line of evidence, tail to whole body ratios vary among the congeners. The maximum ratios range from 1.0 for PCB-169 and PCB-189 (each was detected in 1 of 15 samples) to 15 for PCB-105 (detected in all 15 samples).

The geometric mean tail to whole body ratio was calculated for each congener. The concentration of each congener in whole body tissue for the 2014 samples was multiplied by its congener-specific ratio to provide an estimate of the concentration of the congener in tail tissue.

The BSAF for sediment to tail tissue was calculated using Equation 1. Lipid content in tail tissue (f_{lipid}) was assumed to be the same as for the 2013 samples. This assumption is supported by a statistical comparison of lipid content in whole body crawfish for the 2013 samples to the lipid content for the 2014 samples. Student's t-test failed to identify a statistically significant difference ($p = 0.25$) between the two populations. Prior to conducting Student's t-test, a goodness of fit test was performed to ensure the assumptions of the t-test (e.g., normal distribution) were met.

Toxic Equivalency

Prior to calculation of the BSAFs, the concentration of each congener in tissue and sediment was multiplied by its toxic equivalency factor (TEF), which is based on the relative toxicity of the 12 congeners. For mammalian receptors, which includes humans, PCB-126 (TEF = 0.1) and PCB-169 (TEF = 0.03) are the most toxic. For avian receptors, PCB-126 (TEF = 0.1) and PCB-81 (TEF = 0.05) are the most toxic. The products of concentration and TEFs were summed to produce a toxicity equivalency quotient (TEQ) for each sample. TEQs were calculated for both mammalian and avian receptors.

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Results

Chemical Analysis

The five sample locations for the 2014 sampling program are all in the North Devil's Swamp Lake (NDSL) AOI. The sum of the concentrations of the WHO congeners and TOC in sediment for Sampling Area 1 (SA-1) is atypical compared to the other four Sampling Areas (SA-2 through SA-5), as well as the samples from NDSL collected in 2011. The sum of the congeners for SA-1 (not adjusted for TEQs) is $7.02\text{E-}04$ milligrams per kilogram (mg/kg). This value is at least an order of magnitude lower than the concentrations of $1.04\text{E-}00$ mg/kg for SA-2, $3.22\text{E-}02$ mg/kg for SA-3, $1.6\text{E-}01$ mg/kg for SA-4, and $6.34\text{E-}03$ mg/kg for SA-5. Concentrations for three sediment samples from 2011 analyzed for the WHO congeners are $1.97\text{E-}02$ mg/kg for NDSL-1, $1.68\text{E-}01$ mg/kg for NDSL-5, and $6.99\text{E-}02$ mg/kg for NDSL-8. Concentrations for WHO congeners for SA-1 are also notably different from concentrations in samples from the Drainage Ditch, North Central Devil's Swamp (NCDS), South Devil's Swamp Lake (SDSL) AOIs collected in 2011 and SBBR AOI collected in 2012. For example, the sum of the WHO congeners for DD-9 and NCDS-14, locations which bracket SA-1, are $1.87\text{E-}01$ mg/kg and $5.15\text{E-}02$, respectively.

Similarly, the f_{oc} of $2.7\text{E-}4$ for SA-1 is at least an order of magnitude less than all other samples from the NDSL AOI. The values for the other Sampling Areas are $1.3\text{E-}3$ for SA-2, $2.4\text{E-}03$ for SA-3, $1.4\text{E-}02$ for SA-4, and $9.1\text{E-}03$ for SA-5. The values for the 2011 samples collected from the NDSL AOI range from $2.2\text{E-}03$ to $3.0\text{E-}02$.

The low concentration and f_{oc} for SA-1 is likely attributable to the grain size distribution for this sample relative to the other samples. The percent clay for SA-1 is 25.2 percent. This compares to 35.6 to 45.1 percent for the other samples. The percent fine sand for SA-1 is 14.6 percent. This compares to 1.7 to 4.5 percent for the other samples. The relatively low percentage of clay and high percentage of fine sand suggests that the potential for PCBs to sequester in sediment is lower than other locations within the NDSL AOI. Consequently, the low concentrations of the PCB congeners is not unexpected given these conditions.

As the calculation of a BSAF is based on f_{oc} and the differential between concentrations in sediment and crawfish, inclusion of sediment from SA-1, which is atypical compared to all other sediment collected from the assessment area, would bias the results in a manner which does not appropriately represent the overall conditions in the NDSL AOI or the site as a whole.

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Based on the atypical characteristics of the sediment, as documented above, results from Sampling Area SA-1 are excluded from data used to develop the BSAFs for whole body crawfish and tail tissue.

Using the crawfish and sediment sample data collected in 2014 at sample areas SA-2 through SA-5, Table 1 identifies the geometric mean values for the input parameters required for calculation of the BSAFs for mammalian and avian receptors. The concentrations for whole body tissue and sediment have been adjusted for TEQs specific to mammalian and avian receptors.

**TABLE 1
Geometric Mean Values for Input Parameters for Whole Body BSAFs**

<i>Input Parameter</i>	<i>Units</i>	<i>Geometric Mean</i>
Whole Body Tissue		
Mammalian TEQ	mg/kg wet weight	5.55E-06
Avian TEQ	mg/kg wet weight	6.15E-06
Fraction Whole Body Lipid (f_{lipid})	unitless	1.44E-02
Sediment		
Mammalian TEQ	mg/kg dry weight	2.00E-05
Avian TEQ	mg/kg dry weight	2.20E-05
Fraction Organic Carbon (f_{oc})	unitless	4.47E-03

Attachment D provides documentation for the calculation of the individual WHO congeners in tail tissue. Table 2 identifies the geometric mean values for tail tissue (mammalian receptors only) and f_{lipid} in tail tissue used for the calculation of the sediment to tail tissue BSAF.

**TABLE 2
Geometric Mean Values for Input Parameters for Tail BSAF**

<i>Input Parameter</i>	<i>Units</i>	<i>Geometric Mean</i>
Tail Tissue Mammalian TEQ	mg/kg wet weight	1.94E-06
Fraction Tail Lipid (f_{lipid})	Unitless	1.20E-03

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Sediment to Biota Accumulation Factors

Table 3 identifies the BSAFs for whole body (mammalian and avian receptors) and tail tissue (mammalian receptors) based on the 2014 samples. For comparison, Table 3 also identifies the BSAFs based on the 2013 data.

**TABLE 3
Sediment to Biota Accumulation Factors For Mammalian TEQs**

<i>Pathway</i>	<i>BSAF</i>	
	<i>2013 Data</i>	<i>2014 Data</i>
Sediment to Whole Body		
Mammalian Receptors	1.34E+00	8.60E-02
Avian Receptors	not calculated	8.69E-02
Sediment to Tail	2.29E+01	3.60E-01

The BSAFs for the 2014 data are lower than those calculated using data for crawfish collected in 2013. The BSAFs based on the 2014 samples are based on truly co-located samples. Sediment samples were collected specifically from those locations where crawfish were successfully collected. The BSAFs calculated using crawfish collected in 2013 were based on sediment samples collected at locations in the SBBR AOI different from where the crawfish were collected in SBBR and areas outside of the Site AOIs. Consequently, the co-located crawfish and sediment samples collected in 2014 are considered more representative of actual sediment to crawfish bioaccumulation.

Application of BSAFs for Risk Assessment

The BSAFs presented in Table 3 for the 2014 sampling program are used to calculate exposure concentrations for the HHRA and ERA. The HHRA will evaluate the potential risk to human receptors that eat crawfish. Exposure concentrations are calculated for the five individual AOIs as well as an area-weighted exposure concentration for the entire assessment area (site-wide exposure concentration). It has been noted that the water and bank conditions in many of the smaller AOIs are not very suitable for catching crawfish, and as documented by the crawfish sampling efforts in 2012, 2013, and 2014, a sufficient mass of crawfish could not be collected in

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any one of the AOIs to meet the exposure assumptions for human receptors. Consequently, the data indicate that human receptors that consume crawfish at the consumption rates included in the exposure assumptions would obtain crawfish from the entire assessment area rather than the individuals AOIs. Because of the relatively poor conditions for catching crawfish in the smaller AOIs with the higher PCB concentrations, it is considered conservative to represent the exposure concentrations for the larger assessment area based on the relative area of each AOI. For the area-weighted concentration calculations, the approximate AOI areas are:

Drainage Ditch	1.2 acres
North Devil's Swamp Lake	12.3 acres
North Central Devil's Swamp	37.2 acres
South Devil's Swamp Lake	10.0 acres
South Bayou Baton Rouge	403.2 acres

The BSAF for sediment to tail tissue ($BSAF_{tail}$) is used to calculate mammalian TEQs in tail tissue for each AOI and site-wide. Exposure concentrations are calculated by rearranging Equation 1 to:

$$C_{crawfish} = BSAF_{tail} * (f_{lipid} / (f_{oc} / C_{sediment})) \quad \text{Equation 2}$$

The values for $BSAF_{tail}$ and f_{lipid} are assumed to be constant for all AOIs and throughout the assessment area. Values for f_{oc} are the geometric means of samples from the individual AOIs, and these values are area-weighted to calculate the f_{oc} for the assessment area. Exposure concentrations are calculated for reasonable maximum exposure (RME) and central tendency (CT) scenarios for each AOI. For the RME scenario, exposure is based 95% upper confidence limit (UCL) concentrations for $C_{sediment}$ calculated using ProUCL, Version 5.0 (USEPA 2013). The maximum concentration is used for the RME if the 95% UCL is greater than the maximum concentration. The geometric mean is used for $C_{sediment}$ for the CT scenario. The exposure concentrations for the site-wide RME and CT are calculated based on area weighting the individual AOI values. Table 4 identifies the values for $C_{sediment}$ (mammalian TEQs) and f_{oc} for the RME and CT scenarios for each AOI and site-wide. The sediment values included in the calculations for the NDSL AOI include the samples collected in 2014.

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**TABLE 4
Mammalian TEQs and Fraction Organic Carbon in Sediment**

<i>Scenario</i>	<i>Drainage Ditch</i>	<i>North Devil's Swamp Lake</i>	<i>North-Central Devil's Swamp</i>	<i>South Devil's Swamp Lake</i>	<i>South Bayou Baton Rouge</i>	<i>Site-Wide (Area Weighted)</i>
Mammalian Toxicity Equivalency Quotients (TEQ)						
RME	6.68E-05	1.50E-04	1.80E-05	1.18E-05	2.25E-06	7.78E-06
CT	1.15E-05	8.99E-06	1.59E-06	4.56E-06	8.82E-07	1.26E-06
Fraction Organic Carbon (f_{oc})						
RME and CT	1.25E-03	7.57E-03	9.23E-03	1.32E-02	2.24E-02	2.07E-02

Table 5 identifies the preliminary exposure concentrations for mammalian TEQs for the five AOIs and site-wide. For the RME scenario, exposure concentrations range from 1.38E-09 mg/kg for SBBR to 1.32E-05 mg/kg for the Drainage Ditch. For the CT scenario, exposure concentrations range from 5.40E-10 mg/kg to 2.27E-06 mg/kg. The preliminary site-wide exposure concentrations are 1.62E-07 mg/kg and 2.63E-08 mg/kg for the RME and CT, respectively.

**TABLE 5
Preliminary Exposure Concentrations for Mammalian TEQs in Tail Tissue**

<i>Scenario</i>	<i>Drainage Ditch</i>	<i>North Devil's Swamp Lake</i>	<i>North-Central Devil's Swamp</i>	<i>South Devil's Swamp Lake</i>	<i>South Bayou Baton Rouge</i>	<i>Site-Wide (Area Weighted)</i>
RME	1.32E-05	8.03E-07	6.50E-08	2.08E-08	1.38E-09	1.62E-07
CT	2.27E-06	4.82E-08	5.76E-09	8.04E-09	5.40E-10	2.63E-08

Concentrations are mg/kg wet weight

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The ERA evaluation will consider that the mammalian and avian receptors will forage throughout the entire assessment area. Consequently, exposure concentrations for the RME and CT scenarios are area-weighted for the entire assessment area rather than the individual AOIs. As mammalian and avian wildlife consume entire crawfish, exposure concentrations are based on whole body BSAFs and TEQs. Mammalian and avian TEQs in crawfish are calculated using Equation 2, replacing $BSAF_{tail}$ with the BSAFs for whole body specific to mammalian ($BSAF_{whole\ body-mammal}$) and avian ($BSAF_{whole\ body-avian}$) receptors. Values for $C_{sediment}$ are area-weighted 95 percent UCLs (RME) and geometric mean (CT) concentrations for the individual AOIs. The value for f_{oc} was area-weighted based on geometric means for the individual AOIs. The value for f_{lipid} was the geometric mean for all crawfish collected in 2013 and 2104 and was assumed to be constant throughout the assessment area. The areas identified above for the individual AOIs are used for the area weighting.

Table 6 identifies the parameters for calculation of TEQs in crawfish for mammalian and avian receptors.

TABLE 6
Parameters for Calculation of TEQs for Mammalian and Avian Receptors

Parameter	Units	Value
$BSAF_{whole\ body-mammal}$	unitless	8.60E-02
$BSAF_{whole\ body-avian}$	unitless	8.69E-02
Fraction Lipid (f_{lipid})	unitless	1.71E-02
Sediment		
Mammalian TEQs		
RME	mg/kg dry weight	7.78E-06
CT	mg/kg dry weight	1.26E-06
Avian TEQs		
RME	mg/kg dry weight	4.93E-05
CT	mg/kg dry weight	6.18E-06
Fraction Organic Carbon (f_{oc})	unitless	2.07E-02

Table 7 identifies the preliminary exposure concentrations for mammalian and avian receptors for the RME and CT scenarios.

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TABLE 7
Preliminary Exposure Concentrations for Mammalian and Avian TEQs in Whole Body Tissue

Scenario	Mammalian Receptors	Avian Receptors
RME	5.53E-07	3.54E-06
CT	8.94E-08	4.44E-07

Concentrations are mg/kg wet weight

Conclusion

Crawfish were successfully collected at the five Sampling Areas identified in the Work Plan. Although crawfish were not collected in all traps deployed within a Sampling Area, a sufficient body mass was obtained from each Sampling Area for analysis of the 12 WHO congeners in whole body crawfish. Co-located sediment samples were collected from those areas where crawfish were successfully collected and composited for each Sampling Area.

Sediment collected from SA-1 was atypical of sediment collected from the other four Sampling Areas, as well as sediment collected for the 2011 and 2012 sampling programs. Concentrations of the PCB congeners and f_{oc} were at least an order of magnitude lower than any other sample collected from the assessment area. The low concentrations of congeners and f_{oc} is likely due to the grain size distribution for SA-1, which is substantially different from the other sediment samples. Because SA-1 is atypical compared to sediment in the NDSL AOI and overall assessment area, results from this Sampling Area were not used for calculation of BSAFs.

BSAFs were calculated for sediment to tail for mammalian receptors and sediment to whole body for mammalian and avian receptors. Although tail tissue was not analyzed for the 2014 samples, the ratio of tail to whole body concentrations of the individual congeners for the 2013 data was used to calculate concentrations in tail tissue.

The BSAFs for mammalian receptors calculated using the 2014 data are somewhat lower than those calculated using crawfish data for 2013 and sediment for 2011. The 2014 data are considered more representative due to the use of truly co-located crawfish and sediment samples in the 2014 dataset.

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The BSAF for sediment to tail tissue was used to calculate mammalian TEQs in tail tissue for each of the five AOIs, and those values were area-weighted to determine TEQs for the entire assessment area for use as preliminary exposure concentrations for the HHRA. Concentrations were calculated for RME and CT scenarios. The BSAFs for whole body were used to calculate area-weighted TEQs for mammalian and avian receptors for the entire assessment area. As was done for the HHRA, preliminary exposure concentrations were calculated for RME and CT scenarios.

References

EPA. 2006. Estimation of biota sediment accumulation factor (BSAF) from paired observations of chemical concentrations in biota and sediment. USEPA, Office of Research and Development. EPA/600/R-06/047. ERASC-013. May 2006.

Kay, D.P., A.L. Blankenship, K.K. Coady, A.M. Neigh, M. J. Zwiernik, S.D. Millsap, K. Strause, C. Park, P. Bradley, J.L. Newsted, P.D. Jones, and J.P. Giesy. 2005. Differential accumulations of polychlorinated biphenyl congeners in the aquatic food web at the Kalamazoo River Superfund Site, Michigan. Environ. Sci. Technol. 39:5964-5974.

Attachment D

Additional Documentation for Calculation of BSAFs

ATTACHMENT D

CALCULATION OF TAIL TO WHOLE BODY RATIOS - 2013 CRAWFISH DATA
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	<i>PCB-105</i>	<i>PCB-114</i>	<i>PCB-118</i>	<i>PCB-123</i>	<i>PCB-126</i>	<i>PCB-156-157</i>	<i>PCB-167</i>	<i>PCB-169</i>	<i>PCB-189</i>	<i>PCB-77</i>	<i>PCB-81</i>
<i>Crawfish-1</i>											
Whole Body	1.68E-04	1.49E-05	7.98E-04	1.14E-05	3.28E-06	8.79E-05	4.47E-05	1.73E-06	6.38E-06	1.61E-05	1.51E-06
Tail	3.20E-05	1.90E-06	1.10E-04	1.60E-06	< 5.00E-06	1.30E-05	5.60E-06	< 5.00E-06	< 5.00E-06	4.60E-06	< 5.00E-06
Ratio	1.90E-01	1.28E-01	1.38E-01	1.40E-01		1.48E-01	1.25E-01			2.86E-01	
<i>Crawfish-2</i>											
Whole Body	1.74E-04	1.54E-05	7.20E-04	1.48E-05	1.96E-05	8.67E-05	3.83E-05	1.02E-05	5.80E-06	9.80E-06	1.02E-05
Tail	1.60E-05	< 1.15E-05	6.00E-05	1.80E-06	< 1.15E-05	6.50E-06	3.80E-06	< 1.15E-05	< 1.15E-05	2.40E-06	< 1.15E-05
Ratio	9.20E-02		8.33E-02	1.22E-01		7.50E-02	9.92E-02			2.45E-01	
<i>Crawfish-3</i>											
Whole Body	1.44E-04	1.28E-05	6.02E-04	1.36E-05	1.69E-05	7.44E-05	3.80E-05	5.40E-06	6.60E-06	1.53E-05	1.02E-05
Tail	1.20E-05	< 1.15E-05	4.50E-05	< 1.15E-05	< 1.15E-05	4.40E-06	2.00E-06	< 1.15E-05	< 1.15E-05	< 1.15E-05	< 1.15E-05
Ratio	8.33E-02		7.48E-02			5.91E-02	5.26E-02				
<i>Crawfish-4</i>											
Whole Body	1.95E-04	1.85E-05	8.47E-04	2.10E-05	1.10E-05	1.02E-04	4.82E-05	7.60E-06	9.60E-06	1.87E-05	2.80E-06
Tail	1.70E-05	< 1.10E-05	6.20E-05	< 1.10E-05	< 1.10E-05	6.10E-06	2.70E-06	< 1.10E-05	< 1.10E-05	1.70E-06	< 1.10E-05
Ratio	8.72E-02		7.32E-02			6.01E-02	5.60E-02			9.09E-02	
<i>Crawfish-5</i>											
Whole Body	1.99E-04	1.95E-05	8.63E-04	2.20E-05	7.90E-06	1.04E-04	5.08E-05	5.00E-06	8.50E-06	1.82E-05	1.01E-05
Tail	1.50E-05	< 1.05E-05	6.20E-05	< 1.05E-05	< 1.05E-05	7.90E-06	2.80E-06	< 1.05E-05	< 1.05E-05	2.10E-06	< 1.05E-05
Ratio	7.56E-02		7.19E-02			7.63E-02	5.51E-02			1.15E-01	
<i>Crawfish-6</i>											
Whole Body	5.23E-05	1.17E-05	2.02E-04	1.21E-05	1.05E-05	2.32E-05	1.20E-05	9.40E-06	1.00E-05	5.80E-06	1.01E-05
Tail	2.90E-04	2.30E-05	1.20E-03	2.60E-05	1.40E-05	1.40E-04	6.70E-05	5.30E-06	1.00E-05	2.50E-05	< 1.05E-05
Ratio	5.54E+00	1.97E+00	5.95E+00	2.15E+00	1.33E+00	6.03E+00	5.58E+00	5.64E-01	1.00E+00	4.31E+00	
<i>Crawfish-7</i>											
Whole Body	4.57E-04	2.46E-05	1.77E-03	2.70E-05	8.20E-06	1.77E-04	7.94E-05	7.10E-06	1.03E-05	2.76E-05	9.90E-06
Tail	2.60E-05	< 1.20E-05	8.10E-05	1.10E-06	< 1.20E-05	8.40E-06	4.00E-06	< 1.20E-05	< 1.20E-05	4.60E-06	< 1.20E-05
Ratio	5.69E-02		4.57E-02	4.07E-02		4.74E-02	5.04E-02			1.67E-01	
<i>Crawfish-8</i>											
Whole Body	2.67E-04	2.21E-05	1.12E-03	2.17E-05	6.80E-06	1.47E-04	7.15E-05	5.30E-06	1.27E-05	2.16E-05	2.90E-06
Tail	1.40E-05	< 1.10E-05	5.10E-05	1.80E-06	7.00E-07	6.60E-06	2.80E-06	< 1.10E-05	< 1.10E-05	1.50E-06	< 1.10E-05
Ratio	5.24E-02		4.55E-02	8.29E-02	1.03E-01	4.51E-02	3.92E-02			6.94E-02	
<i>Crawfish-9</i>											
Whole Body	2.52E-04	1.91E-05	1.13E-03	2.27E-05	1.36E-05	1.30E-04	6.41E-05	5.50E-06	1.19E-05	1.83E-05	2.90E-06
Tail	2.40E-05	1.50E-06	7.60E-05	2.40E-06	< 1.10E-05	1.00E-05	4.00E-06	< 1.10E-05	< 1.10E-05	1.70E-06	< 1.10E-05
Ratio	9.51E-02	7.85E-02	6.75E-02	1.06E-01		7.69E-02	6.24E-02			9.29E-02	
<i>Crawfish-10</i>											
Whole Body	2.61E-04	2.18E-05	1.01E-03	1.94E-05	7.00E-06	1.10E-04	5.30E-05	5.00E-06	9.20E-06	2.11E-05	2.70E-06
Tail	1.70E-05	< 1.10E-05	5.40E-05	1.30E-06	< 1.10E-05	6.30E-06	2.90E-06	< 1.10E-05	< 1.10E-05	1.20E-06	< 1.10E-05
Ratio	6.50E-02		5.35E-02	6.70E-02		5.73E-02	5.47E-02			5.69E-02	

ATTACHMENT D

CALCULATION OF TAIL TO WHOLE BODY RATIOS - 2013 CRAWFISH DATA
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	PCB-105	PCB-114	PCB-118	PCB-123	PCB-126	PCB-156-157	PCB-167	PCB-169	PCB-189	PCB-77	PCB-81
<i>Crawfish-11</i>											
Whole Body	9.58E-05	6.90E-06	4.17E-04	7.40E-06	3.20E-06	4.63E-05	2.17E-05	5.00E-06	3.20E-06	8.30E-06	5.00E-06
Tail	9.30E-06	< 5.00E-06	3.50E-05	1.10E-06	< 5.00E-06	5.20E-06	1.90E-06	< 5.00E-06	< 5.00E-06	1.20E-06	< 5.00E-06
Ratio	9.71E-02		8.39E-02	1.49E-01		1.12E-01	8.76E-02			1.45E-01	
<i>Crawfish-12</i>											
Whole Body	1.43E-04	1.18E-05	5.97E-04	1.27E-05	5.20E-06	7.25E-05	3.28E-05	3.70E-06	4.70E-06	1.68E-05	1.90E-06
Tail	1.20E-05	1.20E-06	4.40E-05	1.20E-06	< 5.00E-06	6.10E-06	2.40E-06	< 5.00E-06	< 5.00E-06	1.20E-06	< 5.00E-06
Ratio	8.38E-02	1.02E-01	7.37E-02	9.45E-02		8.41E-02	7.32E-02			7.14E-02	
<i>Crawfish-13</i>											
Whole Body	1.54E-04	1.26E-05	5.82E-04	1.35E-05	3.40E-06	6.95E-05	3.20E-05	1.01E-05	7.00E-06	1.26E-05	1.01E-05
Tail	1.40E-05	< 1.05E-05	5.30E-05	< 1.05E-05	< 1.05E-05	7.90E-06	< 1.05E-05	< 1.05E-05	< 1.05E-05	< 1.05E-05	< 1.05E-05
Ratio	9.09E-02		9.11E-02			1.14E-01					
<i>Crawfish-14</i>											
Whole Body	1.18E-04	1.00E-05	4.87E-04	1.02E-05	4.40E-06	6.30E-05	3.11E-05	3.90E-06	5.80E-06	1.33E-05	1.04E-05
Tail	8.10E-06	< 1.00E-05	3.50E-05	1.40E-06	< 1.00E-05	4.50E-06	2.10E-06	< 1.00E-05	< 1.00E-05	< 1.00E-05	< 1.00E-05
Ratio	6.89E-02		7.18E-02	1.37E-01		7.14E-02	6.75E-02				
<i>Crawfish-15</i>											
Whole Body	1.56E-04	1.26E-05	6.58E-04	1.60E-05	3.30E-06	9.50E-05	4.84E-05	1.00E-05	9.00E-06	1.34E-05	1.00E-05
Tail	1.40E-05	< 1.00E-05	4.70E-05	< 1.00E-05	1.20E-06	5.80E-06	3.10E-06	< 1.00E-05	< 1.00E-05	< 1.00E-05	< 1.00E-05
Ratio	8.97E-02		7.15E-02		3.64E-01	6.11E-02	6.40E-02				
Geometric Mean Ratio	1.11E-01	2.12E-01	9.65E-02	1.33E-01	3.68E-01	9.85E-02	8.95E-02	5.64E-01	1.00E+00	1.62E-01	0.00E+00

Units

Whole Body and Tail - mg/kg wet weight
Ratio - unitless

ATTACHMENT D

CALCULATION OF MAMMALIAN TEQS IN TAIL TISSUE - 2014 CRAWFISH DATA
TIER 2 REMEDIAL INVESTIGATION
DEVIL'S SWAMP LAKE SITE
EAST BATON ROUGE PARISH, LOUISIANA

<i>Parameter</i>	<i>Units</i>	<i>WHO Congener</i>										
		<i>PCB-105</i>	<i>PCB-114</i>	<i>PCB-118</i>	<i>PCB-123</i>	<i>PCB-126</i>	<i>PCB-156-157</i>	<i>PCB-167</i>	<i>PCB-169</i>	<i>PCB-189</i>	<i>PCB-77</i>	<i>PCB-81</i>
Tail-to-Whole Body Ratio	unitless	1.11E-01	2.12E-01	9.65E-02	1.33E-01	3.68E-01	9.85E-02	8.95E-02	5.64E-01	1.00E+00	1.62E-01	0.00E+00
Mammalian TEF	unitless	0.00003	0.00003	0.00003	0.00003	0.1	0.00003	0.00003	0.03	0.0003	0.0001	0.0003
SA-2												
Whole Body Concentration	mg/kg ww	7.90E-02	4.30E-03	2.30E-01	5.40E-03	2.70E-04	2.30E-02	7.10E-03	6.20E-05	6.40E-04	2.60E-03	5.40E-05
Tail Concentration	mg/kg ww	2.62E-07	2.73E-08	6.66E-07	2.15E-08	9.94E-06	6.80E-08	1.91E-08	1.05E-06	1.92E-07	4.21E-08	0.00E+00
SA-3												
Whole Body Concentration	mg/kg ww	8.10E-03	4.30E-04	3.30E-02	8.00E-04	2.50E-04	3.70E-03	1.50E-03	2.60E-05	1.90E-04	6.40E-04	3.10E-05
Tail Concentration	mg/kg ww	2.69E-08	2.73E-09	9.55E-08	3.18E-09	9.20E-06	1.09E-08	4.03E-09	4.40E-07	5.70E-08	1.04E-08	0.00E+00
SA-4												
Whole Body Concentration	mg/kg ww	1.90E-03	9.10E-05	7.40E-03	1.90E-04	1.40E-05	8.80E-04	3.80E-04	4.70E-06	3.60E-05	1.40E-04	2.70E-06
Tail Concentration	mg/kg ww	6.30E-09	5.77E-10	2.14E-08	7.56E-10	5.15E-07	2.60E-09	1.02E-09	7.95E-08	1.08E-08	2.27E-09	0.00E+00
SA-5												
Whole Body Concentration	mg/kg ww	2.50E-04	1.70E-05	1.00E-03	2.00E-05	2.70E-06	1.10E-04	4.90E-05	5.00E-06	4.20E-06	1.80E-05	5.00E-06
Tail Concentration	mg/kg ww	8.29E-10	1.08E-10	2.89E-09	7.96E-11	9.94E-08	3.25E-10	1.32E-10	8.46E-08	1.26E-09	2.91E-10	0.00E+00
Mammalian TEQs												
SA-2	mg/kg ww	1.23E-05										
SA-3	mg/kg ww	9.85E-06										
SA-4	mg/kg ww	6.41E-07										
SA-5	mg/kg ww	1.90E-07										
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Geometric Mean	mg/kg ww	1.94E-06										